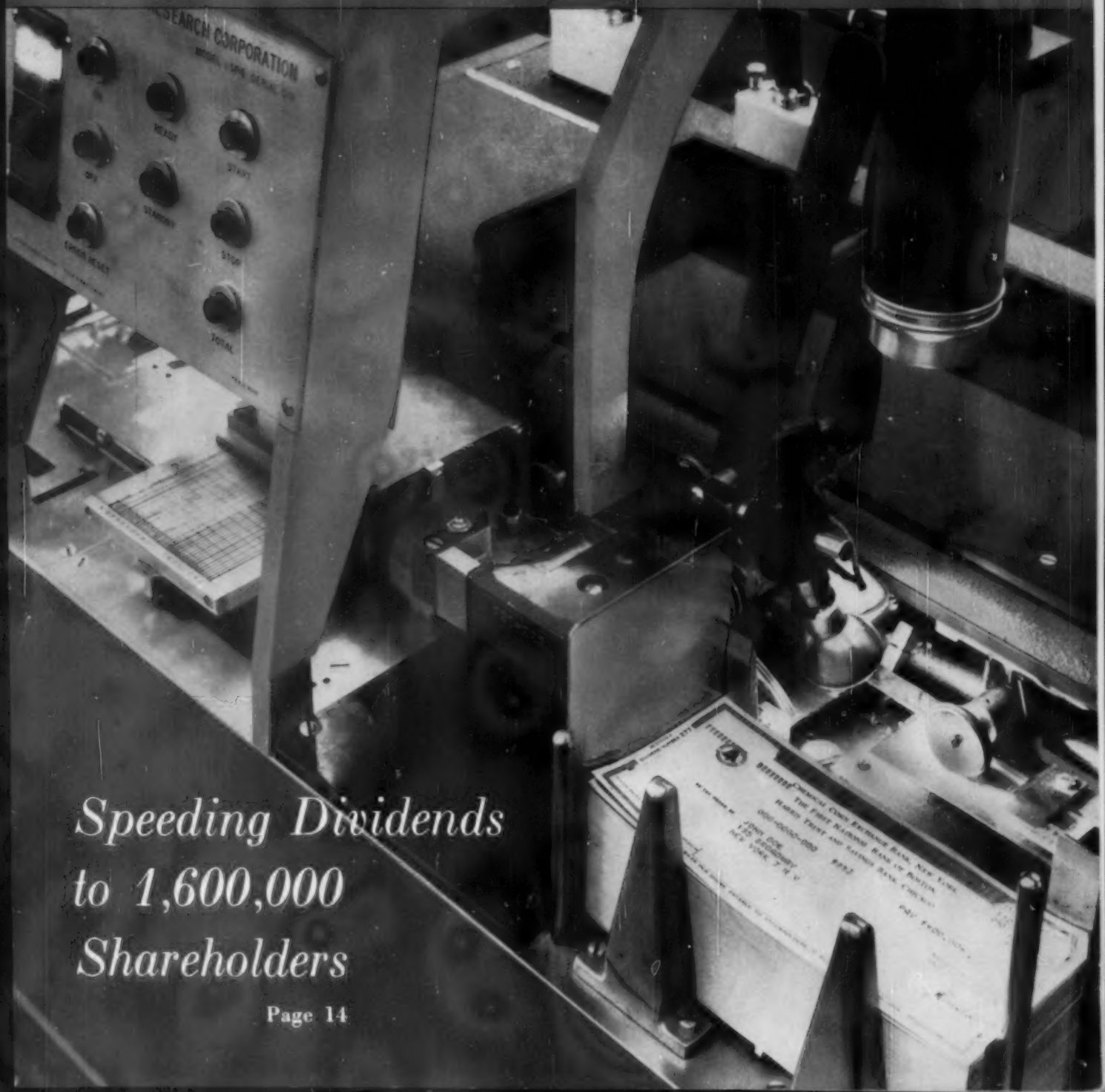
May 1959

MANAGEMENT *and* BUSINESS AUTOMATION



Speeding Dividends to 1,600,000 Shareholders

Page 14

All-transistorized Honeywell 800 . . . the only all-purpose medium-scale data processing system that starts economically, expands with your needs and cannot be outgrown.

correction, sir!

You do not (repeat) do not need special programming to utilize **Honeywell 800**'s unique ability to process up to 8 different jobs independently, simultaneously

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- grow without limit to meet your future needs
- end the problem of costly reprogramming
- process many business jobs independently, in no more time than it takes to do the longest job alone
- solve complex scientific problems more efficiently than computers marketed for this purpose
- process more data per dollar in a working day than any other system

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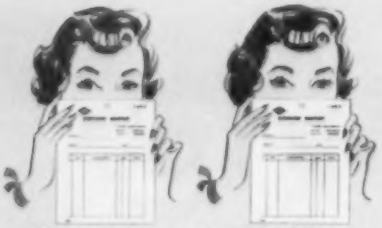

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For More Information Circle Reader Service Card No. 5-53

MANAGEMENT *and* BUSINESS AUTOMATION

May, 1959
Vol. 1, No. 5

Reporting to management on new ideas, developments, applications, results, and the human impact of office automation in all areas of commerce, industry and government.

14 Magnetic Tape Pays A.T. & T. Dividends

By Eugene Whitmore

One of the largest conversions to business automation took place recently when records of 1,600,000 shareholders were converted from ledger-posting to a magnetic tape computer system.

18 "Car-Fax" Brings a New Era In Railroading

By Arnold E. Keller

Integrated data processing has been combined with electronics to open the door to a revolutionary, high-speed freight control system for the Chicago and North Western railroad.

24 St. Louis Hosts '59 N.M.A.A. Conference and Exhibit

A closed circuit TV "automation spectacular" is one highlight of the three-day annual meeting. Plant tours and seminars fill out the well-rounded program.

26 Computer in the Cornfield

By Robert Minor

A small computer is helping to grow and deliver hybrid corn seed for Pfister Associated Growers, Inc., Aurora, Ill.

30 Three-way Tape Exchange Cuts Paper Work

Three of the nations top railroads have set a precedent for American industry by exchanging tape outputs of their data processing system to settle interline freight accounts.

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Letters

Dear Sir:

Your recent article (March Issue) on our Data Processing system here at Owens-Corning Fiberglas Corp. was well-received and appreciated by all involved.

C. A. Seiz, Jr.
Mgr., Systems & Procedures Div.
Owens-Corning Corp.
Toledo, Ohio

Dear Sir:

The promise of your prospectus has been more than fulfilled. Without attempting to take away from your clearly written, well-illustrated and topical feature articles, I want to express my particular admiration for the editorials. The February editorial, "The Disaffected," should certainly restore a balance for an industry that was first oversold and is now being undersold. I was also impressed by the warning to management expressed in the January editorial. By equating electronics with automation unnecessarily, expensive equipment has been purchased where either human or mechanical methods could have done the job efficiently and less expensively . . .

Morton Siegelbaum
Sales Manager
Digitronics Corp.
Albertson, N.Y.

Dear Sir:

Please accept the enclosed check and enter my subscription for two years for your magazine MANAGEMENT and BUSINESS AUTOMATION.

We are in the process of installing a 305 RAMAC, and I believe this publication will be most useful.

J. D. Harden
Assistant Vice President
First National Bank of Dunedin
Dunedin, Fla.

Dear Sir:

I have been reading the copies of your excellent magazine with interest. It is being used by all members of our staff who are interested in automation and electronics.

We have loaned our issues to various members of the faculty at our local college, and they have expressed a real desire to be included on your mailing list.

R. M. Schonk
Cashier
National Bank of Commerce
Norfolk, Va.

Dear Sir:

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Anthony J. Rovito
Tab Supervisor
Bradford Supply Co.
Bradford, Pa.

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For More Information Circle Reader Service Card No. 5-54

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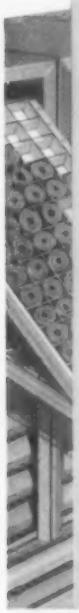

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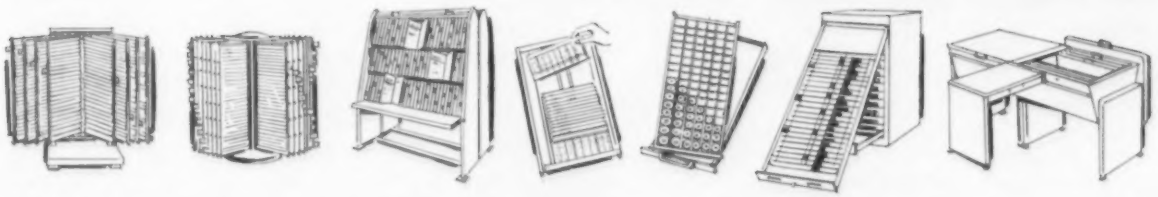

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NEWS

'Computers Can't Replace Controllers'

"The 'figure men,' such as economists, controllers, accountants, statisticians, and financial executives will never be replaced by electronic machines." Wilson Seney, senior consultant with McKinsey and Company, Inc., discounted these

Wilson Seney

fears as he spoke on the subject, "The Non-electronic Controller" before the Controllers' Institute at Bridgeport, Conn.

According to Seney, developments in electronic handling of symbols and figures have actually opened new vistas for the financial executive. Machines are taking over the drudgery of analysis and problem solving. Financial and accounting executives now have the opportunity to concentrate on tasks that can be performed only by men and by machines. If they pursue their opportunities intelligently, perhaps credit will go to electronics for improving management practice as well as data-processing techniques, Seney said.

Management (and specifically the practice of financial and accounting management) is a function of men —not of machines, he continued. "In the past, the important contributions of executives have been nonmechanical and nonelectriconic. In the future financial and accounting executives will continue to be valuable to American business for the same basic reason as in the past —management ability. The financial executive who demonstrates this thesis might be called the nonelectronic controller."

Mr. Seney urged controllers to use positive thinking to gain acceptance on the top management team, rather than to use their function only as a checkrein on spending.

The controller, said Seney, should participate in profit forecasts and long-and-short range planning. The broad-gauge, financial executive tailors his accounting and reporting practices to the business he is serving, Seney continued. "He provides information effectively and economically because he understands management's job. These nonmechanical nonelectronic, and very human abilities have been, and will continue to be, the factors that make the nonelectronic controller an asset to his organization," he concluded.

IMR Corporation Sold to Farrington

Intelligent Machines Research Corp., producers of electronic scanning equipment which reads printed matter by optical sensing and converts the coded information into key-punched cards or magnetic tape, has been acquired by the Farrington Mfg. Co. in an exchange of stock transaction.

David H. Shepard, president of IMR, has joined the Farrington organization as vice president in charge of the IMR division.

Farrington Mfg. Co. produces the Charga-Plate and other credit token systems which provide fast, accurate data at the point of transaction. The Scandex equipment produced by IMR will transfer the point of transaction data to key-punched cards, thereby making the entire billing procedure automatic.

T. J. Watson Slated As NOMA Keynoter

The National Office Management Association will meet in New Orleans May 24-27 for its 40th International Conference and annual exposition.

T. J. Watson, Jr., president of International Business Machines Corp., is slated as the keynote session speaker on Monday morning. Other speakers at the technical and concurrent sessions include Dr. Alfred J. Cardall, Cardall Associates; R. C. Ludlow, RCA Victor Co., Ltd.; M. J. Flynn, General Electric Co.; Dr. Wesley Wiksell, Louisiana State University; J. J. MacDonnell, Price Waterhouse & Co.; Paul Holly, Management Systems, Inc.; Edward Boettner, Jr., U.S. Department of Labor—State Supervisor, New Orleans, La.; and Dr. Earl Strong, Pennsylvania State University.

A special computer session has been planned for Tuesday afternoon, May 26, at 2 p.m. Representatives of computer manufacturers, participating in the show, have been invited to present non-commercial papers on their respective products.

The meetings will take place in the Roosevelt Hotel in New Orleans with the exposition in the Municipal Auditorium.

Niagara Mohawk To Install EDP

Niagara Mohawk Power Corp., serving over 1.3 million customers in upstate New York, has announced plans to install an electronic data processing system for the purpose of increasing the speed and efficiency of its customer accounting operations and eventually for wider use in other phases of company business.

The company has signed a lease agreement with Radio Corporation of America for the RCA 501 computer system.

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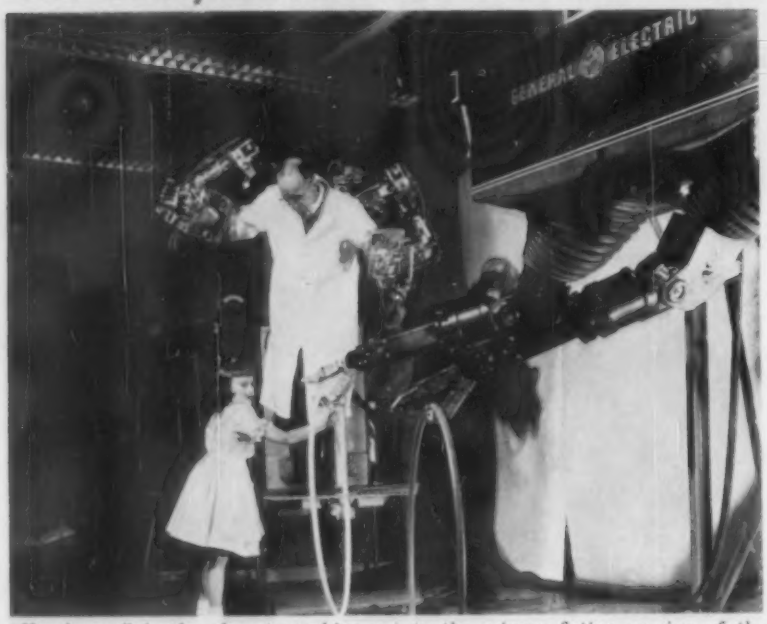
For More Information Circle Reader Service Card No. 5-56

Meet 'Handyman', a Robot Who Can Work!



"Handyman" is the closest machine yet to the science fiction version of the robot who acts as a servo-mechanism. Designed by General Electric Co., the robot will work on atomic powerplants in atomic aircraft. The operator's hands, in the master unit harness, can make the "hands" perform any task.

Visualize EDP Centers in Key Areas for Small Banks

Speaking before the recent convention of the Institute of Radio Engineers, Dr. F. Byers Miller, executive director of the National Association of Bank Auditors and Comptrollers, told the meeting in New York that effects of the electronics industries and banking could lead to strategically-placed computers for the direct application of data processing for many small banks and medium banks.

"One utilization of large-scale equipment," he said, "would be a central data processing system located in key areas and serving many banking units."

"Before this can be attempted," he continued, "the basic requirements for a uniform operating system among banks must be established."

He said that once such centers became a parallel to bank service bureaus, the computer techniques could develop direct time accounting to the point where the weekly, semi-monthly or monthly paycheck from industry would become a thing of the past. Payroll data would be transferred to individual employe's checking accounts, regardless of their bank, and not a piece of paper would change hands.

Dr. F. B. Miller

Dr. Miller emphasized that both the electronics industry and the banking industry must work to develop methods of speeding up the voluminous paper flow in banking and at the same time exploit all techniques to eliminate as much paper as is deemed feasible. The latter, he said, is the most neglected yet the most important goal.

Machine Manufactures Plan National Exhibit

The first national exhibit sponsored by manufacturers of office machines and equipment will be held at the National Guard Armory in Washington, D.C., September 22 to 25, according to an announcement by Fortune P. Ryan, president of the Office Equipment Manufacturers Institute.

"This inaugural exhibit is the first of its kind in the 80-year history of the industry that serves all industry," said Ryan, executive vice president of Royal McBee Corp.

The exhibit will display and demonstrate under one roof all the latest developments in machines, equipment and systems that are related to the progress of business, industry and government. Approximately 50 manufacturers will exhibit. Products will range from desks to electronic computers, from pocket size dictation machines to large photographic and reproducing equipment. Plans are for the exhibit to be a highly informative gathering of the latest advances in the vital areas of communication, record-making and record-keeping.

Bankers Hear Methods Of Reducing Costs

Approximately 300 bankers attending the Pacific Northwest Conference on Banking in Pullman, Wash. heard Harold F. Roach, bank operations specialist for the Research Institute of the National Association of Bank Auditors and Comptrollers, present an outline on how to reduce costs of services in the face of rising volume of paper-handling.

New Sales Manager

Holmes D. McLendon has been named sales manager of commercial products for Kellogg Switchboard and Supply Co., division of International Telephone and Telegraph Corp.

He will direct the sales of Kellogg intercommunication systems and equipment. Mr. McLendon was formerly assistant sales manager of the B. J. Electronics division of Borg-Warner Corp.

Bendix G-15

PUNCHED CARD AND TABULATOR COUPLER

...a new accessory for the Bendix G-15 Digital Computer for low cost, high performance punched card computing

Now, at a cost significantly below that of any similar equipment, Bendix provides a complete computing system with 100 card per minute punched card input and output, and 100 line per minute tabulation.

Heart of the system is the Bendix G-15 general purpose digital computer, which has proven its performance in well over 150 successful installations.

The CA-2 coupler, a newly developed G-15 accessory, enables the computer to operate in conjunction with conventional punched card and tabulating equipment.

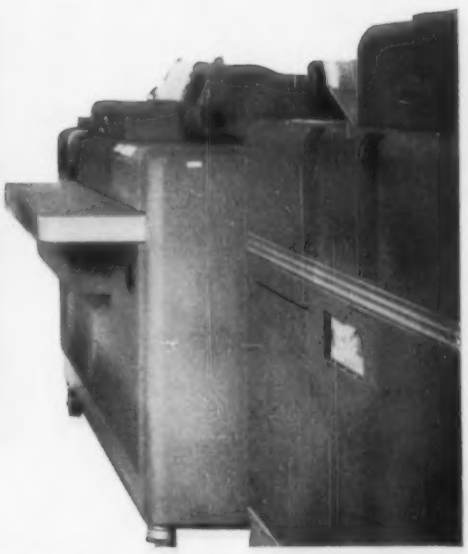
A full 80 columns of numeric, alphabetic, or special character information can be accommodated using only the CA-2 as a connecting link between the card equipment and the G-15. Any column of the card can contain any one of the three types of information.

Three input-output units may be connected simultaneously . . . one for input, one for output, and a third for input or output. Data may be read or punched by standard card units, or printed by standard tabulators. All input and output is under complete control of the computer. Computation can proceed during the input or output cycle, thus assuring maximum over-all computing speed.

In addition to the CA-2, the computer's typewriter and paper tape equipment, and auxiliary magnetic tape storage units may be used for completely versatile input, output, and storage. Both power and space requirements of the complete punched card computer system are approximately half that of other systems of this type.

A system that includes the G-15 computer, the CA-2 coupler, two summary punches and a tabulator, leases for approximately half the price of a typical medium-priced system with similar capabilities.

Whether you are now using punched card or computing equipment, or if you are delaying such plans due to high costs, you will want to learn more about this inexpensive, efficient equipment. Detailed technical information on the G-15 and the CA-2 will be sent on request. Write to the Bendix Computer Division of Bendix Aviation Corporation, Los Angeles 45, California.



For More Information Circle Reader Service Card No. 5-57

Burroughs Re-aligns Marketing Operations

The Burroughs Corporation has completed a major reorganization of marketing operations, re-aligning sales and service forces to meet the growing needs and demands of electronic banking.

V. James Ford

V. James Ford, formerly an ElectroData Division regional manager, has been appointed manager of the financial sales department. He will direct activities of three departments to give "pinpointed" attention to various phases of banking.

J. R. King

The Todd Company division, as a major supplier of checks, documents, Magnetic Ink Character Recognition imprinting and on-premises imprinting equipment, is also playing a major role in this realignment.

The company has also reorganized its commercial sales effort as a separate operation from its bank plans. J. R. King, former branch manager in Terre Haute, Ind., has been placed in charge.

Addressograph-Multigraph Discloses Price Increase

Price increases averaging five percent have been announced for the broad range of office machines produced by Addressograph-Multigraph Corp.

While other manufacturers of office equipment gave no immediate indication that they would follow suit, there were reports that some had given thought to this move, with implications that a general industry increase might be in the offing for this year.

Digitronics Delivers Electronic Multiplier

Digitronics Corp. recently delivered the first prototype of an electronic multiplier capable of multiplying an 8-digit variable by any one of five constant 6-digit multipliers in an average time of seven-thousands of a second to the Addressograph-Multigraph Corp.

The multiplier will be used to expand the capabilities of Addressograph's accounting Class 9300 and other machines.

Hazzard Heads Univac Sales

John D. Hazzard has been named general sales manager of the Remington Rand Univac Division of Sperry Rand Corp.

He joined the company in 1942, and since then has served in various sales executive capacities in the Cleveland, Richmond, Greensboro and Pittsburgh branches. He was senior branch manager and electronics regional manager in Pittsburgh. In 1957, he was elevated to assistant general sales manager for the Univac division.

John D. Hazzard

Photorectifier Plate May Extend Computer Flexibility

A photorectifier plate, called Rex-Array, that may greatly extend the range and increase the flexibility of digital computer systems, has been announced by the Rex Corp. of West Acton, Mass.

According to Gilbert E. Bell, president of The Rex Corp., the Rex-Array replaces the conventional diode (small vacuum tube) network for computers and other electronic data systems. Bell pointed out that programming versatility becomes unlimited through the use of simple masking cards.

A computer designed around the Rex-Array reading principle could be programmed by simply inserting a punched card containing coded instructions. The card, acting as a light mask for the Rex-Array, would activate the required circuits of the computer for a given application, said Bell.

The Rex-Array is designed to replace the conventional diode network in computers and other electronic data systems.

Demonstrated at the recent IRE Show in New York, the photorectifier plates are said to be applicable to existing digital computers as well as new units.

News continued on page 46

AMERICA ALWAYS OUTPERFORMS ITS PROMISES

We grow so fast our goals are exceeded soon after they are set!

7 BIG REASONS FOR CONFIDENCE IN AMERICA'S FUTURE

1. More People—Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.

2. More Jobs—Though employment in some areas has fallen off, there are 15 million more jobs than in 1939—and there will be *22 million more* in 1975 than today.

3. More Income—Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.

4. More Production—U.S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.

5. More Savings—Individual savings are at highest level ever—*$340 billion*—a record amount available for spending.

6. More Research—*$10 billion* spent each year will pay off in more jobs, better living, whole new industries.

7. More Needs—In the next few years we will need more than *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

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MAGNETIC TAPE PAYS A.T.&T. DIVIDENDS

Records of 1,600,000 stockholders were converted from ledger-posting to a magnetic tape computer system in a three-year program designed to improve customer service.

By Eugene Whitmore

TO improve service to its 1,600,000 stockholders, American Telephone and Telegraph Co. has undertaken one of the largest conversions to business automation ever attempted by private business.

The project—the transfer of stock and bond division records from machine-posted ledger sheets to an automatic data processing system—is nearing completion. It has required the punching of 14 million cards and the installation of a large magnetic tape computer system.

While this A.T.&T. system is beyond the scope of many business operations, the company's approach to automation provides an excellent blueprint for smaller firms that are considering system changes.

According to Treasurer John J. Scanlon (who was named vice president of rates and revenues on April 1), the system has provided greater speed and accuracy, better service to shareholders and management, faster reporting, lower space costs, elimination of a large number of temporary employes, and other fringe benefits.

Before the file was completely converted, the division tackled a monumental task—the running of both proxy cards and dividend checks this quarter in the same period of time the checks alone were scheduled to be processed.

At the same time, plans are already underway to facilitate the handling of the three-for-one stock split recently declared by the company. This, in itself, will require the fullest effort of every employe and every piece of equipment.

In describing the scope of the entire transfer of records to an automated system, Mr. Scanlon said: "We've known for many years that new methods were needed in our stock and bond division (a hand-operated, machine-posted ledger

John Steger, manager of the computer room, supervises magnetic tape operation from master control console in data processing center.

system had been in use since 1923), and we've studied the problem constantly. Since the end of World War II, our shareholders list has more than doubled, creating operating problems never faced before."

Such activities, he continued, as an offer of stock rights can easily triple the work load over night. Employe stock plans create a heavy increase in division activity, both at inception and maturity, and there is another problem—a pleasant one—presented by brokers throughout the country. These gentlemen, from time to time, advise their customers to buy A.T.&T. stock. This means a flurry of activity in the division.

Many of these developments are impossible to anticipate, he pointed out, yet the division is charged with the responsibility of retaining equipment and manpower reserves to cope with them when they do occur. These were some of the circumstances that prompted the move to automation on a large scale.

By the time the automation cut-over reached its final stage, A.T.&T. had already achieved the two top benefits desired from the system—economy and increased accuracy in serving the stockholders. As Mr. Scanlon noted, accuracy and prompt handling of all transactions are the chief responsibility of the division. Purchase of new equipment and investment in new methods had to produce both of these results as a first requirement.

The primary effort of the stock and bond division is to maintain an accurate record of every share of A.T.&T. stock as required by the company's policy, by state and federal law, and according to the needs of each shareholder.

Dividends are paid four times a year. Since the company does not think it fair to penalize a stock-

All transactions affecting stockholders are processed through the stock control office. Clerks refer to "stock book" which holds complete record of shareholders prepared from magnetic tape files. Each desk in department (center) is linked by a special conveyor system to speed data flow.

holder because he, or she, lives across the continent from New York, one of the objectives of automation is to assure that dividend checks reach every stockholder on the same day.

The move to automation began in 1956 when a four-man committee was named to begin a study of the feasibility of such a move in the division.

Four men with a problem

The first man selected was then in charge of methods for the division. He had more than 25 years of experience in the telephone business, though none in electronics. He was given responsibility over line operations when the data processing system went into operation.

The second man was well-experienced in telephone accounting, having set up the automatic message accounting system of an associated Bell company in Washington, D.C. The third man had been in charge of much of the old manual system and has since been named to head the entire methods staff. He had comprehensive knowledge of the existing situation and also understood problems of handling a stock book on a daily, large-volume basis.

The fourth man participating in the study had 20 years of punched card experience behind him and was in charge of the tabulating division in the comptroller's department.

By June of 1957, it had been determined that the records could be adopted to automatic data processing. The staff's next decision was to use IBM machines as a basic part of the data processing system. The staff was then supplemented with a man familiar with large-scale electronic equipment which would be used, and a year later an expert was added to counsel the extensive programming activity being carried out at that time.

In selecting equipment, the major problem was that the basic record had many details requiring

about 600 characters. This involved creating a series of cards for each record, and to sort and collate this tremendous volume every time data was needed seemed impractical from a time and cost standpoint. An IBM 705 magnetic tape central processing unit with related high-speed equipment was the final choice to handle the job.

Planning for the physical installation of equipment began in April, 1957. A group of specialists were organized as an installation-planning committee. Members included the vice president of an A.T.&.T. subsidiary, a general contractor, an electrical contractor, an air conditioning engineer, an IBM installation engineer, and the four-man feasibility staff.

The pilot pays off

This group visited other companies to learn about the hazards of similar site preparations. They found that (1) this was no job for an executive inexperienced in big-scale construction—it is wise to appoint a coordinator, and (2) that most installations which fell behind had gotten into trouble attempting to cut corners or save money on construction and rearrangement. It appeared that such attempts at saving usually proved the most costly feature of an installation.

Final plans were presented to the building subsidiary in January, 1958, and work started the following April. By July the site was ready for the installation of equipment.

During the construction period, a pilot operation had been in effect, preparing for the time when the machines were in and ready to assume their full job. One unit of about 17,000 accounts was cut over to the new system. This was done to avoid costly mistakes that could take place because of the rigid time schedule and large force involved. Setting up this model operation offered the opportunity of studying employe's learning curves and of determining how fast they could reach required production. It also resulted in many major changes in the conversion procedure which, incidentally, was carried out at a figure substantially below the original cost estimate.

A million, and growing

As it operates today, the stock and bond division has five major responsibilities. It must record a customer's transaction in A.T.&T. shares with speed and accuracy. This means that if an investor buys shares on a Monday, the broker sends the "sold" certificate to the stock and bond division that day, and on Tuesday the new share certificate must be ready for delivery.

The division must keep an up-dated record for every shareholder and be able to furnish account information instantaneously. It keeps these records in balance with total outstanding stock at all times. It computes, writes and mails quarterly dividend checks to over 1,600,000 shareholders, and finally it mails proxy cards each time a proxy is needed to authorize management to take certain action or to elect directors. This final task includes the tabulating of the proxy returns.

To maintain these records on a current basis in 1958 alone, the division handled 208,000 transfer debits, 224,000 transfer credits, 605,000 stock conversions, plus 3,000 employe-stock-plan entries. During this one year, 274,000 shareholder address changes were recorded, an additional load.

This totals 1,314,000 postings for one year, and the volume is growing. This growth in 1958 was represented by 151,000 new accounts added to the shareholders' list.

This basic routine still does not represent the total job. Some 16 states require the company to report dividend payments or shares held for residents in those states. The Department of Internal Revenue requires a report of payments to all stockholders, and payments to citizens of foreign countries must also be reported.

Tape takes over

To handle these tasks, and to keep records on the 1,600,000 accounts, the stock and bond division's data processing operation has, in addition to the IBM 705 with its two tape record coordinators, 17 tape drives, and two card readers, four high-speed printers, six heat-transfer printers (Addressograph-Multigraph Corp.), four analyzing reader punches (Intelligent Machines Research Corp.), 20 key punches and verifiers, and a variety of sorters, tabulators and collators as well as other related equipment. The system also requires the use of 15 Bell and Howell Phillipsburg enclosing and inserting machines and two Pitney-Bowes enclosing and inserting machines.

An idea of the system's physical requirements can be seen from the fact that it required 40 tons of key-punched cards for the file conversion. The data punched into these cards was transferred to tape—an oxide-coated, half-inch, plastic strip—which stores 200 characters per inch. Each 2400-foot reel weighs about two pounds and contains the equivalent of 25,000 80-column cards.

The daily routine of the division includes the handling of (1) certificates which daily pour in carrying advice of stock purchases—either by a new shareholder or by a current shareholder—and stock sales in part or in full by a shareholder, and (2) notices of address changes, deaths of stockholders, other transfers or changes of dividend mailing such as sending checks to a bank, a trustee, or other authorized person or institution.

Continued on page 32

C&NW
CHICAGO
AND
NORTH
WESTERN

Punched cards and Transceivers are the key to a revolutionary, high-speed car and train control system which links 68 Chicago and North Western freight terminals.

'Car-Fax' Brings A New Era in Railroading

By Arnold E. Keller

THE Chicago and North Western has combined electronics with integrated data processing in a move that has opened the door to a new era in high-speed railroad freight service.

The new system promises to revolutionize many traditional practices—and eliminate many traditional problems—in running a great railroad.

Called "Car-Fax", the system is fundamentally an information and communication operation. Through the use of new electronic equipment 68 field stations, located along the road's 9,400 miles of track, funnel information on car and train movements to a nerve center in Chicago. There the information is processed and relayed back to the proper field stations. At the same time, the information is used to speed vital accounting and management functions as well.

Ben W. Heineman, North Western's automation-minded board chairman, views Car-Fax as one of the most efficient systems of integrated data processing in use by any railroad in the country.

In his words: "Its impact on the efficiency of the Chicago and North Western—and on other railroads as its use is extended—represents one of the most significant advances since the introduction of diesel motive power."

Key to the system, which keeps constant vigil on car and train movements as they occur—24 hours a day—is the punched card and the IBM Transceiver, a device which transmits and receives information from punched cards. Circuits which link the Transceivers to the Chicago "nerve center" of the network are leased telephone lines for the exclusive use of Car-Fax.

The C&NW Transceiver operation is the largest commercial installation of this type of equipment in the world. Only the system now in use by the U.S. Air Force is larger in size and scope.

In practice, once the data is punched in cards by the originating station all steps are automatic. On the North Western, this applies to every opera-

tion on every main line, branch line, station and freight yard along the railroad's multi-state right-of-way.

Freight to the railroads is mass transportation geared to meet the shippers' specific requirements. In the case of the C&NW, its "plant" of steel rails forms a network tying together almost 1,000 communities in nine states. Its lines intersect those of other railroads everywhere. Its terminals are connected with still others.

Keeping track of trains

Thousands of "transactions" occur within this big plant each day. On the average, about 3,000 cars are loaded daily for shipment. Thousands more are released as empties after unloading. Empties are ordered by other shippers and then moved to loading docks. About 5,000 loaded and empty cars are received from connecting railroads at 222 interchange points each day. Another 5,000 cars are delivered daily to other railroads. About 25,000 individual car movements are made daily on 300 trains.

Loaded and empty cars move in an endless flow around the clock, from and to cities in the four corners of the U.S.—and bordering countries as well. Cars are diverted or reconsigned by shippers. Other shippers trace for the whereabouts of their cars.

Keeping track of this complex movement of cars and trains was a mammoth—and costly—clerical job. The North Western management decided to take a look at the possibilities of automating.

This "look-see" responsibility fell to F. M. Baldauf, a railroad operations veteran of many years. With the assistance of the accounting firm of Arthur Andersen & Co., American Telephone and Telegraph Co., and I.B.M., a systems study was started in late 1956. This study was completed and a detailed automation program developed by September, 1957. The program was approved in October, 1957, and the same group which developed the program was given responsibility for its installation.

Back to school

The first step was to select a group of men who could qualify as field instructors—men who, when trained, could carry out the personnel training program throughout the railroad's operation. The men selected were yard clerks and telegraphers from various stations along the line. None had previous training in punched cards or business machine operation.

Those selected were joined by members of the traffic, operating and accounting departments in a five-week training course. A special classroom was set up in the Chicago Daily News building as "school" headquarters. The room was equipped with two Transceivers, two IBM 402's (for printing reports) and six key-punch machines.

During the five-week period, the men worked an average of 12 hours a day, six days a week. They studied in detail a specially prepared manual which explained, step-by-step, the details of the system. They learned to operate all equipment and they also conducted tests of the new system by simulating actual operating conditions and using actual documents. For these tests, one section of the classroom became an outlying station while the other section operated as the central office.

A lesson at Long Pine

At the end of the training period, Mr. Baldauf had a crew of 25 qualified instructors, and on December 2, 1957, the first field installation was launched.

The initial IDP cut-over was made on the Black Hills and Nebraska divisions at the far western end of C&NW's lines, where daily freight traffic is the lightest. These divisions include stations at Belle Fourche and Rapid City, S. D., Casper, Wyo., and Long Pine, Chadron, Norfolk, Fremont and Omaha, Neb.

The instructors split into teams of various numbers, depending upon the size of the station assigned, with a single object—simultaneous cut-over of all stations in the division.

Freight clerks and telegraphers were selected at each station for training as key punch, Transceiver and accounting machine operators. All station personnel were thoroughly indoctrinated in each step of the new system. Each person received a copy of the detailed "manual" which explained the entire workings of the system and even contained a special glossary of railroad terms and definitions as related to the IDP system.

The Black Hills change-over was completed in about a month, and the instruction crew moved on to the Iowa and Galena divisions. The Black Hill's experience was enough to convince officials that the new system was a cinch for success. Instead of expected grumbles and gripes they found a genuine enthusiasm for the new method among the station personnel and even a spirit of competition among the various stations as to accuracy of the systems results. Within another month these divisions were trained, and the crew moved on through the remaining divisions until all stations were operating under the new system. This was accomplished in November of 1958, less than a year after the first field installation was initiated.

The thoroughness and efficiency of the training

At car-tracing headquarters, traffic clerks, seated at this rotary-file table, have all car movement records at their fingertips.

program completely disproved the old adage, "You can't teach an old dog new tricks." As an example, George Mills, the 67-year-old agent (and one-man staff) of the Long Pine, Neb. station became an adept key punch and Transceiver operator—one of the most proficient on the line. Other veteran railroaders also quickly took to the new operation and the transition from old to new was accomplished with little difficulty. Actually only 5, of the more than 400 people trained, failed to adapt to the new system and had to be replaced. Most of them retired at their own request.

In addition to the training program, the C&NW had to lay out almost $400,000 in a building program to provide adequate equipment housing at various stations along the line.

In operation, the key source document for the Car-Fax system is the "waybill". The freight waybill is like a ticket in passenger service. In far more detail than a passenger ticket, however, the waybill lists car number, contents, shipper, origin, consignee, destination, route, charges and other pertinent information. The waybill accompanies every freight car wherever it travels.

Because this waybill provides information used as input for the Car-Fax operation, it is important that all bills be standard in contents and appearance. To accomplish this, more than 650 freight agents were visited and instructed in a new, uniform method of preparing the bills.

Necessary information for the Car-Fax system is taken from the waybill and key-punched into cards at the originating station. This is the only manual operation of the system. From that time, all transmission and processing of the data is handled electronically.

Here is an example of Car-Fax in action: A freight train is leaving a yard at 9 A.M. Each car of the train, its number, contents, destination, etc.,—all taken from the waybill—is represented by a punched card. All of the cards make up what is known as a "train consist." The train's departure and "consist" are reported to the data processing center in Chicago via the Transceiver circuits. Complete information on each car load—or empty car—is punched simultaneously on duplicate cards at Chicago.

Less than half an hour later—by 9:25 A.M. to be exact—the advance "train consist" has been relayed by the Chicago processing center to the

The machine room in the Chicago headquarters "nerve center" where hourly reports are processed for use by the adjoining car-tracing department.

next Car-Fax reporting yard. The train itself will arrive hours later.

Because it has the available information, the yard can now make advance switching arrangements and do other planning to cut any possible terminal delay.

Strangely enough, no Car-Fax field stations communicate with each other directly. The entire flow of information between stations is through the Chicago center. Here the system goes to work with electronic speed and accuracy to gather and analyze vital information for traffic, operations and accounting departments.

All departure, arrival and interchange records received by Transceivers are listed hourly and sent next door to the traffic department's car-tracing headquarters. Here, seated around a mechanical rotary-file table, tracing clerks have at their fingertips an up-to-the-minute record of all car movements.

Transceivers in Chicago control flow of car information to and from the 68 field stations. This is the second largest Transceiver hook-up in the world.

The number of cars

Each night the IDP center prepares a complete tracing report, a detailed listing of all cars on the C&NW, showing—along with other information—the last completed movement (arrival) or interchange with another road. This report, covering upward of 50,000 cars daily, is prepared in numerical order for fast and easy tracing or reconsigning of carloads en route.

A less detailed car movement report, listing only car numbers and "last move" is airmailed to the road's 60 traffic agencies for fast tracing.

Two "new load" reports are run off daily for each state—one for cars originating in the state, the other for cars destined for the state. The principal use of these reports is to keep North Western salesmen, from coast-to-coast, alerted to movements to and from customers in their territories. Though not a tracing record, it provides quick reference of car movements for various customers in their territories as well.

Another important by-product of the Car-Fax system is information regarding where empty equipment is available for loading. Increased efficiency in distribution of empty cars means improved utilization—which has the practical effect of increasing C&NW's freight car fleet—at a time when the railroad industry is faced with a critical car shortage.

The importance of "unearnings"

One of the most important achievements, from a financial standpoint, is a daily "unearned" revenue report—a railroad first according to North Western officials.

The Car-Fax system analyzes total revenue values of cars loaded on the C&NW and received from connections; it automatically breaks down C&NW revenues from interline revenues according to established divisions. These are actually unearned revenues for accounting purposes, and they remain so until the road has completed its

Key punches, a transceiver and an accounting machine are at each of the 68 field stations. All operating personnel were former clerks and telegraphers, trained on the job to handle the automated equipment.

service by delivery of cars to consignees or connecting roads.

By projecting the dollar value of loadings daily, management receives information on trends and a picture of expected revenues on an earned basis.

Under old methods, accurate revenue reporting had more historical rather than actual value in disclosing trends as they occur. Yet such information is vital for budgeting and over-all, day-to-day management decisions. The system will eventually provide management with daily, accurate unearned revenue estimates and statistical reports. This phase of revenue accounting is now being cut into the system.

There are other benefits derived from Car-Fax: the freight rate department has more factual information to determine rate adjustments; traffic trends will be disclosed immediately, so that volume may be predicted with accuracy and permit advance adjustments in service to meet unusual demands.

But, with all of its electronic talents, the North Western's new Car-Fax system does not and cannot run trains or "think" for itself. It can't even operate without trained, capable people who keep the Transceivers clicking at the 68 field stations and at the Chicago center.

Similar to a combined quality and production control system in a manufacturing industry, Car-Fax brings to the North Western a new degree of efficiency in freight service. It provides management with supervisory control over operations that match the finest in modern industry.

A tool for the modern

The new system is a tool of modern railroading, much like the modern diesel locomotive, an intricate signaling system, or the latest track machinery. It brings to the Chicago and North Western current and complete information on the substantial flow of America's commerce which the railroad hauls.

Car-Fax will, as Ben Heineman puts it, "enhance the transportation know-how of the people who keep North Western's trains on the move, and it will play an important role in the development of a constantly improving brand of railroad freight service—second to none." ■

St. Louis Host To '59 N.M.A.A. Conference

A CLOSED circuit telecast of business automation in action will highlight the 1959 annual conference of the National Machine Accountants Association, June 24, 25, 26, at the Chase-Park Plaza Hotels in St. Louis, Mo.

Lt. General Leslie R. Groves, vice-president of Remington Rand, Division of Sperry Rand, will deliver the keynote address at the opening session on Wednesday, June 24.

For the "automation spectacular," TV cameras will take the registrants on a tour of three large scale computer centers where viewers will watch the workings of the installations projected on a giant screen in the hotel ballroom.

Selected for the telecast were the Burroughs Datatron 220 installation of the Areonautical Chart and Information Center in St. Louis; the IBM 702-5 operation of the Monsanto Chemical Co., also in St. Louis; and the Minneapolis Honeywell Datamatic 1000 installation of the Michigan Hospital Service (Blue Cross) in Detroit, Mich. In addition to a first hand view of the installations in action, the registrants will see and hear top management representatives of the three companies discuss their automation systems.

Automation heads program

The use of punched cards continues its dominating role of the annual conference. A record breaking number of plant tours—nine in all—offers a cross-section of St. Louis industries using machine accounting systems. These tours have been planned as seminars, rather than the usual sight-seeing trips. At each installation speakers will discuss all aspects, including equipment, personnel, forms and methods.

Plant tours include: Southwestern Bell Telephone Co. (centralized vs. decentralized machine accounting and the company's automatic message accounting system); Falstaff Brewing Corp. (branch plant paychecks by teletype and IBM 305 Ramac); Concordia Publishing House (order billing and inventory control using Remington Rand Card-A-Matic and Univac 60); and the St. Louis City Comptroller's Office (water department billing and forms handling equipment featuring the Moore "Seagull").

Twenty-two classroom seminars will be presented with a view to providing topics of interest to all registrants. They will include: General Ledger Accounting (A. D. Froning, General Life Insurance Co.); Payroll and Labor Distribution (Frank Hyzdu, Olin Mathieson Corp.); Accounts Receivable (Harvey Protzel, Ernst and Ernst); and Card-A-Type Order Writing (L. W. Johnson, General Motors Corp).

Electronic seminars will include: Automatic Programming, presented by Dr. Grace Hopper, Remington Rand Corp.; Insurance Accounting on the IBM 650, by Carl Marquardt, State Farm Insurance; and Public Accounting in Electronics, presented by Harry Littler of Peat, Marwick, Mitchell and Co.

Mrs. Mary Hawes, Burroughs Corp., will discuss the "Future in Electronics at Burrough," and Dr. H. R. Grosch, International Business Machines Corp., will talk on the same subject from the IBM standpoint. Leonard Vogt, of International Shoe Co., will review the new developments in special purpose equipment as he discusses the "Advances in IDP."

Two special seminars will head the general education program: "Management Decisions for Automation," led by S. D. Williams, assistant controller, Standard Oil of Ohio, and "Carrying Through with Automation," led by A. J. Drucker, head of the Education Department of IBM Corp. These two seminars have been designed to provide registrants with experiences of other companies in a successful automation program.

Film on automation "Do Nots"

The seminars will include sections covering the subjects: Why Automate?; Selection of Automation Team; What to Automate; Determining Equipment Needs; Interdepartmental Education; Conversion, Shakedown — Debugging — Refinements; and Progress Evaluation. The seminars will conclude with a satirical film produced especially for the conference by the St. Louis Chapter. It illustrates "What Not to Do in Automating."

Seminars on general education include: Quality Control in Data Processing, with N. J. A. Beck, Sperry Gyroscope; On Job Training, Larry Allen, Brown Shoe Co.; and Effective Communications, C. H. Naukam, Moore Business Forms. James A. Hunt, methods director of the First National Bank

Lt. Gen. Leslie R. Groves will deliver keynote address on Wednesday.

of Orlando, Fla., and NMAA national vice-president in charge of education, will lead an educational program discussion.

According to Eugene A. Haessing, national vice-president in charge of the 1959 conference, the exhibit area will feature one of the largest displays of equipment, supplies and services ever assembled.

Special shoe treat for ladies

The 33 exhibitors include American Lithofold Corp.; Burroughs Corp.; Clarkson Press; Columbia Ribbon and Carbon Mfg. Co.; Con. P. Curran Printing Co.; Curtis 1000, Inc.; Diebold, Inc.; Egry Register Co.; Ennis Tag and Salesbook Co.; Friden, Inc.; IBM Corp.; Kee Lox Co.; Mac Panel Co.; MANAGEMENT and BUSINESS AUTOMATION; Monarch Metal Products; Monroe Calculating Co.; Moore Business Forms; Ray Myers, Inc.; National Cash Register Co.; R.C.A.; Record Files, Inc.; Remington Rand-Univac; Service Bureau Corp.; Snap Out Forms Co.; Statistical Tabulating Corp.; Sten-C-Label; Systematics, Inc.; Tab Products Co.; Tabulating Card Co.; Teletype Corp.; Uarco, Inc.; Weber Marking Systems; and The Wright Line.

A special program for the ladies will include a tour of historic Grant's Farm, the estate of August A. Busch Jr., famed brewery head, and a lecture on "Fads and Facts of Exercise and Diet" by Dr. W. C. Eberhardt, Director of Physical Education at St. Louis University. The ladies will also be treated to a tremendous shoe display, including Wohl's famous antique collection.

Closed circuit TV tour of three installations is highlight of the "automation spectacular." Members will see EDP operations of the Aeronautical Chart and Information Center in St. Louis, the Monsanto Chemical Co. in St. Louis, and the Michigan Hospital Center in Detroit, Mich.

■

By Robert Minor

Computer in the Cornfield

Electronic data processing plays a new role in growing and selling hybrid seed.

QUIETLY, efficiently, and far behind the front line action, an electronic computer is playing an important role in the battle to improve and increase the farmers' corn yield. While it can't plant the seed or harvest the crop, the computer can determine the best type of corn to be planted —and expedite the delivery of seed to the customer-farmer.

This is the job assigned to a computer installed at the Aurora, Ill. headquarters of Pfister Associated Growers, Inc., one of the nation's large hybrid corn seed producers. The machine, an LGP-30, product of Royal McBee Corp., is the heart of Pfister's data processing center which was organized a year ago to provide improved service to the company's quarter of a million customers.

The two principal computer applications, according to David G. Tuttle, director of data processing, are compilation of research statistics and sales order-shipment control.

The final decision to install the computer was made by Pfister's 23 "bosses"—all farmer-growers who own and direct the closed corporation. These men, in a sense, are each directors of a manufacturing "plant" since each produces the hybrid corn seed sold by the company.

Their business is agriculture, but as management, they could visualize the computer's value to both the research and sales departments. This foresight has contributed to Pfister's position as one of the "big four" in hybrid seed production, an industry which today claims 98 percent of all corn seed sold.

Neighborhood salesmen

Pfister's operate 24 regional sales offices throughout the country. From these offices, some 110 sales supervisors direct the sales efforts of 7,000 farmers who act as dealers, representing the Pfister company on a part time basis. These farmers solicit seed orders from neighboring farms, deliver the merchandise, and collect the bills. At the present time there are 45 different types of hybrid seed in the Pfister catalogs along with a complete line of alfalfa and sorghum seeds and a variety of insecticides.

Dave Tuttle, director of data processing, and Maxine Harker run through a series of research tests on a new strain of hybrid corn.

The farmer-customer places a tentative seed order in the fall when he is approached by the dealer. He usually gives a confirming order in early spring. He is under no obligation to take his fall order in part or in full, and he can increase, decrease or cancel it completely. With over 250,000 customers, the task of relating future orders with potential, shipments with orders, and tying in the whole picture with seed production was impossible for a manual system.

With the new system, Pfister's management will, for the first time in the company's history, have up-to-the-minute reports of their far-flung sales operations. Each farmer-customer has been assigned an account number. The number includes a region code, sales supervisor code, and a farmer-salesman code.

As future orders are received at the data processing center, they are transferred to punched paper tape prepared on a Flexo-writer. This tape becomes the basis for a computer-prepared "Supervisor-Dealer Activity Report." This report, prepared weekly, shows (1) each dealer's (Pfister's term for the farmer-salesman) total list of last year's customers to date, his new customers, and the total bushels sold, (2) current year's total-to-date number of customers, number of new customers, new customer's total bushels, and grand total of bushels, (3) dealer's quota expressed in total bushels and percent, (4) dealer's potential number of customers, and bushels, also expressed in percents, and (5) the past week's activity—showing the number of customers ordering from the dealers, number of new customers included, the new customers' bushels, and the total bushels for the week.

A better picture

With this weekly report, the 110 sales supervisors have a complete picture of their territory and the regional managers have a basis for directing the activity of the supervisors.

Other reports break down the incoming orders by customer name and address and the various types of seed ordered.

Confirmed orders and shipments are recorded in the same manner, rounding out a complete sales reporting picture. Earl Reeves, treasurer-controller, is enthusiastic about the results achieved so far from the sales application, and future studies are slated to determine the feasibility of centralizing the billing and accounts receivable operation.

No less enthusiastic over the computer operation is Pfister's research director, Louis M. Camp. While data processing has promised a new wealth

Raw test data from test sites is prepared as computer input on an "Add Punch."

The tape represents one group of tests. Compilation time for individual tests has been reduced from five to one hour.

of information to the company's sales and production department, its most spectacular accomplishments have been in the field of research statistics.

Under Mr. Camp, 13 research workers carry out a constant, nation-wide testing operation in a search for a better-looking, higher-yielding hybrid seed for various geographical locations.

The research department develops these seeds by crossing various strains, or "parents" as they refer to them in the laboratories. By crossing 12 parents, 1,440 possible combinations can be obtained, and some or all of these may be tested under actual growing conditions. Laboratory tests, such as take place in the Aurora headquarters, simulate all types of soil and climate conditions, but field-testing seed is the only true and scientific method available for determining the value of any new hybrid.

Two years to show promise

These tests involve the planting of some 350 acres of corn in 200 test locations in 35 states. Over 500 tests are conducted each year on countless varieties of seeds. Included in the tests are the experimental seeds, Pfister's long-established brands, and competitive products.

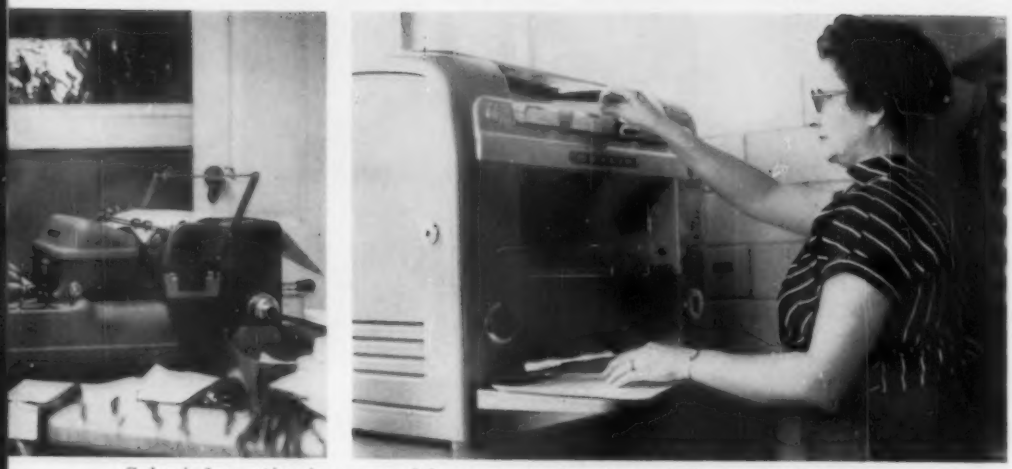
Preliminary tests of all new hybrids are made for two years with results evaluated carefully each year. If the new hybrid looks promising, it is put to further tests for another three years. At the end of this period, if the results indicate a superior seed—one that is better than another in the catalog line—it is added to the line on the recommendation of the research department. On the average, two improved varieties are added to the line each year, replacing two existing types in most cases. Research, then, is given the responsibility of keeping the product competitive with—or better than—other hybrids produced.

Right now the department is working on a strain that will reduce the height of the corn stalk while keeping the yield at a continuing high level. The popularity of such lyrics as "corn is as high as an elephant's eye," and "down where the tall corn grows," is not shared by the farmer who is now harvesting his crop with mechanical pickers. For maximum efficiency the corn should be closer to the ground, so the search is on for a "dwarf" corn (with stalks under six feet high) that will lend itself to automation during the harvest months and still maintain a substantial per-bushel yield.

The computer enters the research picture when the test results are evaluated. Some 13 factors are involved in each test, all expressed in numeric values. These include the number of plants, the number of ears, general appearance of the corn and other pertinent information. Results from each type of seed tested in the 200 locations must be brought together by each of these factors. The results must then be combined with those of prior years. Different strains must be compared, one against the other, and on and on to endless analytical possibilities.

With the manual sytem, the entire research staff had to devote three months of each year in compiling the test results. Precious research time was at a halt while factors were handposted and computed on hand-operated calculators. The job not only consumed valuable time, it also permitted a high percentage of error. As Dave Tuttle pointed out, the greatest percent of errors in research comes from manual posting and re-posting of factors and results.

Under the system he has designed, the test results come to the data processing center on a



Sales information is prepared for computer input on a "Flexowriter" (picture center) and both test results and sales reports are printed on reproducing masters to prepare the copies for distribution.

card form about the size of a post card. Each card contains the test results for a particular seed. Usually, about four or five different seeds are grown in the same plot for comparative purposes, and the cards for each of these seeds are stapled together.

This "raw data" pours into the Aurora headquarters where it is prepared as input for the computer on an NCR "Add Punch." The operator takes an adding machine tape of the various factors on each card for control-total purposes. At the same time the machine creates a punched paper tape for computer input. The tape is fed into the computer which in turn produces the rating of each seed for all test factors, comparing one seed against another and ranking the seeds in sequence of estimated yield, based on the results of the test plot.

The computer reports are printed on reproducing masters which are processed through an Ozalid machine to obtain the desired number of copies. In addition to printed reports, the computer results are also punched into paper tape. This tape is used when it is necessary to combine results of previous tests of the same seed for new evaluation.

"We would never consider putting billing on the computer."

Twelve years in two months

The system has reduced the compilation time for individual test results to one hour from five hours as required by the manual system. Beside releasing research men from thousands of clerical hours, this has made possible many types of statistical studies that would have been prohibitive before from both a time and cost standpoint.

Mr. Tuttle estimates that the computer can perform 12 man-years of test data compilations in about two months. He emphasized that the installation was not motivated by a cost reduction program, however. Actually, the data processing system has necessitated additional personnel, but the results obtained so far have, in the eyes of management, more than justified the increase in operating expenses.

The production and sale of seed corn is a growing business, literally and figuratively. The American farmer will plant over 80 million acres of hybrid this year. The Pfister organization feels that the data processing system will provide an electronic key to a greater portion of this seed market; both from improved service in the order and shipping areas, and in more accurate and timely research statistics that will ultimately provide the farmer with an improved corn yield.

F. E. Martin, vice-president and comptroller, Illinois Central, Chicago; R. H. Sutton, vice president and general auditor, Union Pacific, Omaha; and R. B. Curry, comptroller, Southern Railway, Washington, D.C., exchange checks amounting to a total $4½ million to cover February interline freight settlements between the three railroads. In the foreground are reels of magnetic tape containing details of transactions which will be processed through the roads' data systems. The bundled paper represents paperwork which each road would have to process under the former system.

Three-Way Tape Exchange Cuts Paperwork

THREE of the nation's top railroads combined efforts to strike a major blow at one of the biggest paperwork problems in the railroad industry — the settlement of interline freight accounts.

In a history-making data processing exchange, the three roads, Illinois Central, Southern, and Union Pacific, effected interline settlements for March amounting to over $4½ million—by a simple exchange of magnetic tapes. Each of the roads has applied interline accounting functions to its IBM 705 data processing system. The exchange program links the electronic output of the Illinois Central's computer in Chicago, the Southern's computer in Atlanta, and the Union Pacific's computer in Omaha.

Interline settlement, a most important and complicated area of the industry, is the standard means of resolving the interchange of freight among the near-700 railroads in the U. S. A shipment of freight may be handled by as many as 14 roads before it reaches its destination. In practice the terminating carrier collects the freight charges. It is then the latter's responsibility to distribute portions of the freight revenue to each carrier involved in the handling of the shipment. Distribution of revenue is based on agreed-upon percentages depending upon the nature of the freight moved.

The settlements are accomplished through the preparation of documents known as "interline abstracts." Each abstract contains a recapitulation of all similar freight movements completed

A partial view of the data processing center of Illinois Central Railroad in Chicago. Like centers are in operation in Omaha, for Union Pacific, and in Atlanta for Southern. Tapes compiled in each of these centers are exchanged by the railroads, eliminating many intermediate processing steps in the figuring of interline settlements.

during the month. A listing of each shipment, a total of the charges resulting, and a distribution breakdown of charges is included in this abstract.

Each month the railroads exchange huge stacks of these interline abstract sheets. For example: Illinois Central, alone, processes an average of 20,000 abstracts a month. The new settlement technique, made possible by compatible electronic data processing systems, allows the three participating roads to eliminate many intermediate processing steps—and to greatly reduce the control and balancing efforts.

With this initial action, the participating railroads are pioneering a data exchange program which can hold tremendous potential for the entire business world.

The exchange of information between vendor and supplier, within trade associations, or a similar exchange of information in areas of scientific development—all made possible with common language systems—could spell the beginning of the end for America's paperwork problem. ■

Cass Gonska, assistant bureau chief of the I.C. data processing center, prepares to feed magnetic tape containing Union Pacific's interline settlement data into the IBM 705 system.

All of the cards on the truck at the left will be transferred to a single reel of magnetic tape in the card-to-tape conversion. Once taped, the data is ready for computer handling.

Magnetic Tape Pays A.T. & T. Dividends

Continued from page 17

Machine transfers printed information onto tabulating cards, creating checks, warrants or proxies to be mailed.

Data first goes to the stock book for account identification and checking of debited certificates. This book consists of folders of continuous form paper on which has been printed all of the detailed information concerning the stock transaction. This is the same information which is contained on the master tapes.

The stock book is handled by 29 employes in the stock control office. They sit at a double row of 14 reference desks with a switchboard desk front and center. The 28 desks are split by a continuous, doubt-belt, conveyor system worked out specifically for this job by A.T.&.T.

Two motors keep the belt moving throughout the work day. In operation, each girl has an assigned slot so that any other girl can send data to her by dropping it into the proper slot. There is a center slot which is a return only, running directly back to the switchboard desk. This system speeds flow of information from one reference desk to another.

They have the stockholder's number

To process this information in an automated system, a series of account numbers, codes and other data for sorting and accounting are used. Records of the 1,600,000 stockholders are run alphabetically (a legal requirement) and according to a 10-digit account number which consists of several units. The first three numbers represent the balancing unit, the next six are the sequence number, the last is the check digit. This account number is also the draft, warrant and proxy number.

To allow for growth, a 500-number interval was left between account numbers at the time of file conversion. These intervals allow for adding a considerable number of shareholders—actually providing unlimited expansion—in proper alphabetical sequence without a revision of the coding system.

The shareholder list is divided into balancing units of approximately 2,000 accounts, the basic work batch in all operations.

All of the transactions from the shareholders' control room are then forwarded to the key punch department where cards are punched and verified. They are then put through a card-to-tape conversion.

Once this data is taped, it is ready for computer handling. All of the daily activity is merged into the tapes containing the cumulative activity that

"Scanning" machine (see cover) optically reads selected printed matter and punches this into the cards as they pass through.

Enclosing machines can handle checks, proxies, notices and return envelopes in one operation.

has occurred since the last up-dating of the tape files. The latter operation takes place every six weeks. A new edition of the stock record book is prepared for the control section four times a year. Supplementary lists make the status of accounts available at all times.

The up-dating and file merging are typical of the many "on line" operations performed on the computer. "On line" is a term used to describe computer operations that require use of the "brain" (the nerve center of the computer where all storage, filing, searching and computation is done) along with the various tape units. Such operations include the computation of dividends, proxy preparations, tax statistics, and the preparation of financial reports.

All printing of computed results are done on an "off line" basis. In other words, the results from the computer processing are transferred from tape to high speed printers without using the central unit of the system. Card-to-tape conversion is another example of "off line" operation.

The high-speed printers turn out the dividend checks, proxies and other individual shareholder information on a special, continuous-form heat transfer paper. This paper is then processed through an Addressograph-Multigraph machine which transfers the printed information onto tabulating cards, creating finally the checks, warrants or proxies which will be mailed.

The tab card documents then move through a "scanning" machine which reads selected printed matter by optical sensing and punches it into the cards. The selected information includes account number, sorting codes, number of shares, and when dividend payments are involved, the amount of dividend.

The scanning machines, officially known as analyzing reader punches, are a product of the Intelligent Research Machine Corp. (recently purchased by the Farrington Mfg. Co., Needham, Mass.—see News, page 8). The machines used by A.T.&T. were specially designed by David H. Shepard, 36-year-old IMR president, after many months of research.

A character is recognized

Performing character recognition by optical means, rather than through the use of a special magnetic ink character printing, the punches were designed to read the printed output of the IBM 720.

To reach this objective, it was necessary to study some 35 types of carbon (in conjunction with the Columbia Ribbon and Carbon Mfg. Co.) before one was found that would leave the proper impression from the heat-transfer operation.

The scanner reads, punches and compares for accuracy at the speed of 180 cards per minute. It computes its own check digit to determine that all

printed information has been read and punched correctly.

It also automatically punches the necessary zeros to the left of the share and dividend amounts. It has a reject pocket for cards found to be in error. In addition, the scanner is equipped with an accumulator which can total such things as number of shares, or dividends amounts, punching the results in a summary card at the end of the run.

The cards are then processed through various machine accounting operations and sorted geographically. This operation groups each item by state and then to each large city within the state. Special sortings include a bulk sort to large banks and trustees, and the sorting of special cases, such as those stockholders who have not cashed their checks for a period of nine months.

A system for service

The checks, proxies or warrants then go to the basement level which houses 17 inserting and closing machines. The final trip is to the New York City post office. Postal authorities are notified of the mailings in advance and cooperate with A.T.&.T. West coast mail, for instance, goes to the post office four days ahead of the effective date on the checks. After this first transfer, the remainder of the mail goes on an hourly schedule which has been established so that individual stockholders in every state receive their check on the same day.

In discussing the personnel requirements for a data processing system of this type, G. N. Armstrong, assistant treasurer, pointed out that nearly every company has at least some men who have the skills and attitude necessary to succeed in the job of introducing and running the system. "They need not be engineers," he said, "for the company that makes the equipment to do the job supplies ample electronic engineering talent."

He emphasized that the selected personnel must have determination, persistence, and a strong will to overcome difficulties. He cautioned against assigning a man to supervise data processing system work as an incidental duty.

In the same vein, particular attention was directed to the cutover phase of the new system. H. M. Boettinger, stock transfer manager and the man who was responsible for the systems engineering, put it this way: "The investment was so large that the cutover had to be made with all possible speed, utilizing the present employes of the organization as fast as equipment was ready and as fast as they acquired the needed new skills."

There were other complications as well, such as the recently-announced stock split. This move meant the pace had to be tripled in order to have the new system ready for the tremendous volume involved in a stock split operation.

Management of American Tel and Tel, a publicly regulated company, adheres to the principle that it is a duty to conduct its business with the greatest possible accuracy and speed—to obey all legal requirements—to serve its stockholders with prompt courtesy—and to operate at the lowest possible cost.

In setting up its costs policy, however, management was aware that a higher first cost might mean a long-run saving. It was also aware that the sheer size and bulk of the operation could project an error into astronomical figures. Plans had to be carefully laid long in advance of any physical move, and system changes could not be made until all contingencies were fully considered. This positive thinking was emphasized throughout the entire conversion program, and it proved of limitless value.

The system as it now stands is based on one five-day-week shift with a reserve in night or weekend work. While permanent employes have not been and will not be released, it is still expected that large savings will accrue from the elimination of temporary help. These "extra" employes in 1958 accounted for some 65 percent of the total hours required for the several tasks charged to the stock and bond division.

At the same time, the system has been planned to service a constantly growing list of shareholders. The same central processing equipment, it is believed, can handle up to 3 million individual stock holders with but a few additions of output devices.

The automation program assures a greater degree of accuracy and efficiency for A.T.&T. shareholders and, in the eyes of management, fits into the long-established Bell System tradition of service to its customers.

The new system called for a modification of the building to house the new computer. First the structural work, then the raised floor, and finally the installation.

High-speed printers turn out information on a special, continuous-form, heat-transfer paper. ■

MBA Showcase

New Products for Business Automation

Magnetic Ink Printing

Magnetic ink character printing, of the type approved as standard for automatic check processing by the American Bankers Association, is now available on a production-run basis from the Standard Register Co. The new code characters (digits and symbols) can be printed on continuous forms and Zipset check, paper and tab card types, in accordance with ABA specifications as to design and tolerances. Circle No. 5-1

Continuous Tab Card

Formscard is a continuous tabulating card developed by Forms, Inc. with the medial strips eliminated. Adaptable for payroll checks, accounts payable, proxies, premium notices, inventory control or dividends, Formscards can be prepared as multiple part forms, with vouchers of any desired length or with side stubs. They can be printed front and back, in color and numbered, and they can also be stapled for unit set use. Soon to be available with pre-punching. Circle No. 5-2

Alphanumeric Printer

Applications ranging from missile checkout to sales listings in department stores are possible with this Model 3206 Potter Instrument Co. highspeed alphanumeric printer. A printout rate of 48,000 digits per second is possible, and data can be accepted from any source of digital information—such as dignitizers, magnetic or perforated tapes, electronic counters or computers. Circle No. 5-3

Forms Burster

A forms burster equipped with a new trimmer said to be capable of trimming up to 12 plies of fastened control punched forms, has been announced by Uarco, Inc. The new unit trims and bursts continuous forms 3 to 17 inches in length at 90 feet per minute, and a larger model can handle up to 22 inches at the same speed. Trimming is accomcomplished by two large shearing wheels protected by transparent plastic shields. They can trim one, both or neither margin. Circle No. 5-4

Automatic Mailer

The Automailer claims complete mailing in one automatic operation. Provides for high-speed paper gathering (feeding, collating), folding, nesting, inserting, sealing, counting, error detection-correction, postal metering and indicia imprinting, stacking and delivery —in a single one-person operation at speeds up to 6,000 envelopes per hour. By Office Dynamics Corp. Circle No. 5-5

NEW SIMPLIFIED FILING EFFICIENCY

WRIGHT ROTARY

At a glance, the photographs shown may look the same – but look again. The camera speed has captured the very few motions and speed of this reference filing operation.

This is motorized filing at its best in the Wright Rotary Model 40. All controls are close to operator. It's a complete work station, space saving unit. Engineered with low silhouette appearance and the most advanced vinyl coated steel covers all outside panel. Paint maintenance has been eliminated – appearance lasts for machine life. Operation is fast and quiet too.

No need to change record size – Wright Rotary Files will handle any and all sizes in individual trays with large front labeling to speed identification when rotating. Speed is built right in to give immediate action on impulse – no record is more than three seconds away.

The file and the operator are fully protected with an exclusive Safety Beam which when broken by loose objects stops the rotation until object is removed. Resetting is no longer necessary – minutes are saved.

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For More Information Circle Reader Service Card No. 5-57

Recomp II: A New Desk-size Computer

This is the complete Recomp II portable, general-purpose computer which can be operational in office, lab or in the field.

An MBA Product Preview

A DESK-SIZE, general purpose, transistorized, single address digital computer, the Recomp II, has been developed by the Autonetics division of North American Aviation, Inc.

The 197-lb. Recomp II requires no special installation or air conditioning, and can be plugged into any standard wall outlet.

Its main features are built-in floating point arithmetic and automatic decimal conversion; compact, transistor construction; simple command structure for programming; a large storage capacity; and random access to the memory at any location. It has five components—the computer and memory, a photoelectric tape reader, typewriter, tape punch and console.

The magnetic disc memory contains 4,096 words, each of 40-bit length, including 16 words placed in high-speed loops. Five circulating 1-word registers perform arithmetic and logical operations, and each word in the memory holds up to 12 decimal digits, 8 alpha characters, or 2 program instructions. The unit is designed to retain over 8,000 instructions at a time or will store over 49,000 decimal digits of data.

The computer can take 49 instructions including 18 arithmetic instructions, 22 logical and transfer instructions, and 9 input/output instructions. Among the 49 are 9 built-in floating point instructions.

Data input equipment includes a photoelectric tape reader which can read 400 characters per second, a control console decimal keyboard, and an electric typewriter—with standardized tape configuration for punched tape input. Data output is via the electric typewriter (10 characters a second), paper tape punch (20 characters a second), and control console digital readout.

A large-capacity memory drum is one of the main features of the Recomp II. It has a 4,096 word capacity.

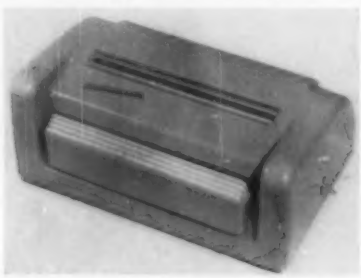
The Recomp II readout panel is considered a major advantage by the company since it expedites operation by flashing arabic numerals to reveal contents of any word or register.

Another of the advantages claimed for the Recomp II is simplified programming, speeded up by the diversified command list and sequentially controlled internal operations. The computer performs additions at the rate of 1,920 per second, fixed-point multiplication in 10.4 milliseconds, and floating point multiplication in 11.9 milliseconds. Floating point instructions can be performed without subroutines. ■

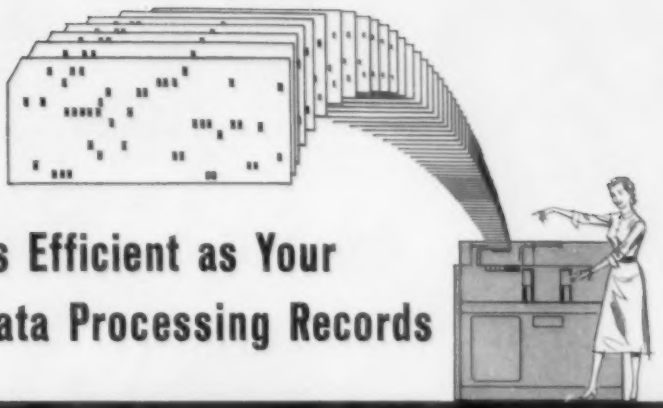
Read-out Form Printer

A read-out form printer with a 12-decade capacity and an automatic form ejector has been developed by the Electronics division of Clary Corp. The Model 1941 is an extension of the Clary Parallel Entry Data Printer with a paper transport mechanism which positions pre-printed forms. Applications include recording automatic check-out data, logging instrumentation data and recording quality control reports. Circle No. 5-6

Photocopy Accessory



An accessory unit which is said to turn thermal-process copying units into "unlimited" photocopy machines is the latest product of the Nord Mfg. Corp. Called the P-9 Nord-A-Matic accessory, this machine is designed to work along side of blue thermal-process machines without altering these units or attaching to them. It is said to guarantee that all inks, all colors, ball point, blue, red, and rubber stamps can be copied on all types of paper. The company also states that when blue print or diazo machines are used they become a complete copying machine with the attachment, capable of copying opaque materials as well as papers printed on two sides. Circle No. 5-7



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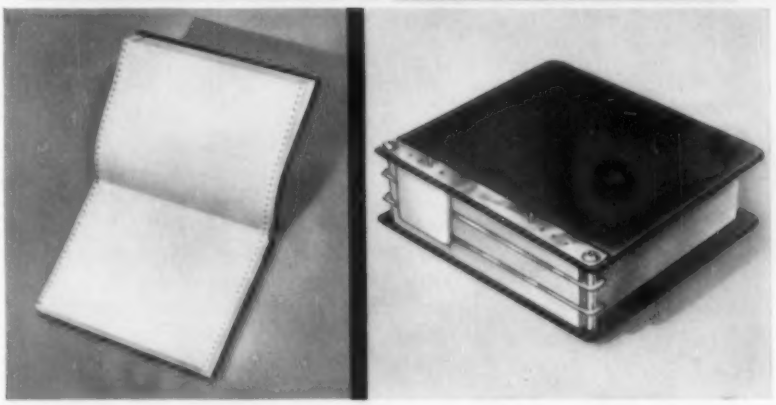
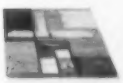
NBB's Storage and Reference Binders for Tab Runs





Write for this folder showing NBB's complete and economically priced line which provides:

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. . . will publish the first nationwide wage survey of all machine accounting and tabulating department jobs.

This comprehensive report will, for the first time, allow management to compare the salary range for each of its machine accounting department jobs with the average of its geographical area, and the country as a whole. All jobs will be separately classified. A by-product of the survey will be the determination of the most popular job titles and descriptions within the machine accounting department.

You'll want to be sure to read this important feature in the June issue of MBA . .

. . . which also will bring you a unique complete automation system combining intercommunication by wire and closed circuit TV, with punched cards. By so doing, an eastern trucking company has reduced a normal two or three day delivery to overnight service. This installation is presented as an outstanding example of the total automation concept.

Keep up-to-date with the fascinating, rapidly-unfolding developments in business automation by making . . .

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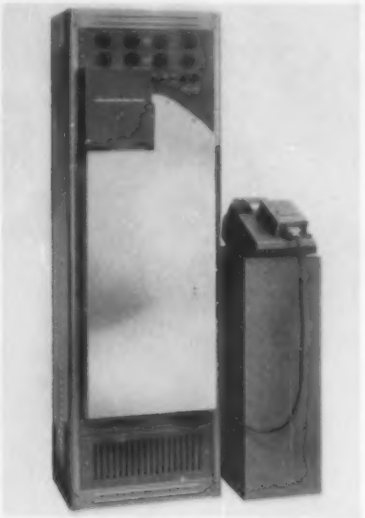
Analysis System



The Victor Class 100 analysis system has been designed to meet the problem of computing detailed cost, sales and inventory figures. It takes the place of computing, tabulating, classifying and interclassifying in accounting, forecasting and planning procedures. The system has a central program unit which is connected to a Digit-Matic printer. It processes raw data in random form from punched tape, a by-product of a previous operation—such as from a cash register, reading at the rate of 1,000 digits per second. It selects and adds related figures and transmits them electronically to the printer which accumulates them and produces a detail strip. From Victor Adding Machine Co. Circle No. 5-8

Stencil Duplicator

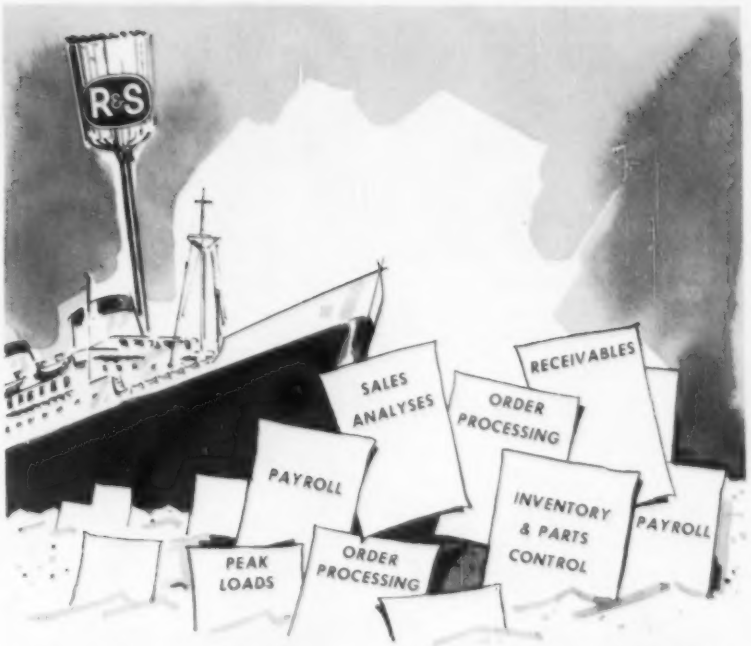
Gestefax, introduced recently by Gestetner Duplicator Corp. is designed to reproduce photographs, forms, drawings, letters, etc., directly onto a mimeo stencil. The stencil is then ready to go to work. The machine allows the freedom associated with the offset duplicator in as much as paste-up layouts, drawings and the like can be used to make the stencil. There is no camera, no chemicals, no negatives or transferring task necessary. The unit fits on an office desk. Circle No. 5-9.

Drawer Files

The Wright Line, Inc. has announced improvements to its line of 15 and 24-drawer, full-suspension files. A caster base has been added to the 15-drawer model, shown here, which allows it to be easily moved about on four ball bearing, rubber casters. The base is projected beyond the file front to give it extra stability, even when the cradles are extended Circle No. 5-10

IDP Systems

The Synchro-Monroe President accounting machine, when joined to a tape punch and control chassis becomes an integrated data processing system which can simultaneously punch tape or cards as a by-product of regular accounting jobs, such as payroll, accounts payable, accounts receivable, stock record or general ledger. The control chassis contains a plugboard arrangement that allows the machine to be reprogrammed. A removable encoder permits choice of a 5, 6, 7 or 8-channel tape, or direct connection to an IBM 024-card punch. A motion check, built into the tape punch, makes sure that every figure coded by the accounting machine is recorded on the tape. From Monroe Calculating Machine Co. Circle No. 5-11



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MONTREAL	407 McGILL STREET, MONTREAL, CANADA. Victor 2-3831
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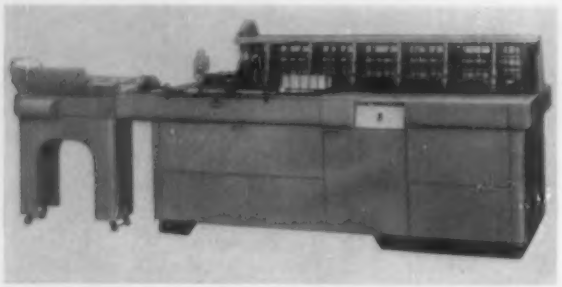
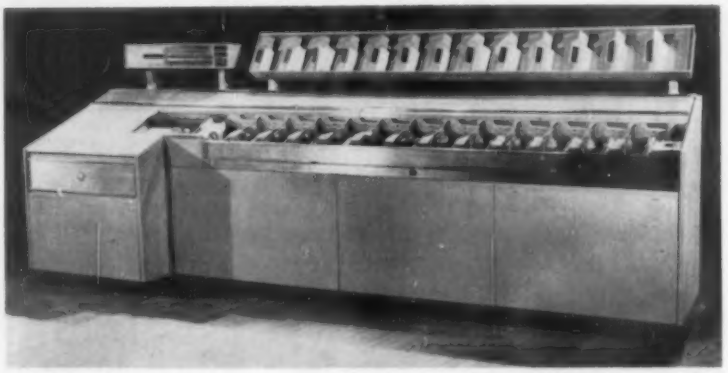
For More Information Circle Reader Service Card No. 5-62

Mailing Inserter



A new model of the Phillipsburg Universal inserter has recently been unveiled. The new Universal-B size is said to have a broader scope of operation. It handles envelopes from 3⅜ by 6½ inches up to and including 9 by 12 inches, and it accommodates flaps up to 3 inches in depth. This is an increase in size over the original standard unit. Changes also occur in lengths and weights of various models. The new model is available with 2, 4, 6, or 8 stations to insert a maximum of 2, 4, 6 or 8 enclosures, along with built-in postage meter, punched card attachment, open-feed station, and postal indicia printer. Circle No. 5-12

Burroughs Introduces New MICR Units



The Burroughs electronic sorter, designed to move checks at speeds in excess of 1,500 items per minute.

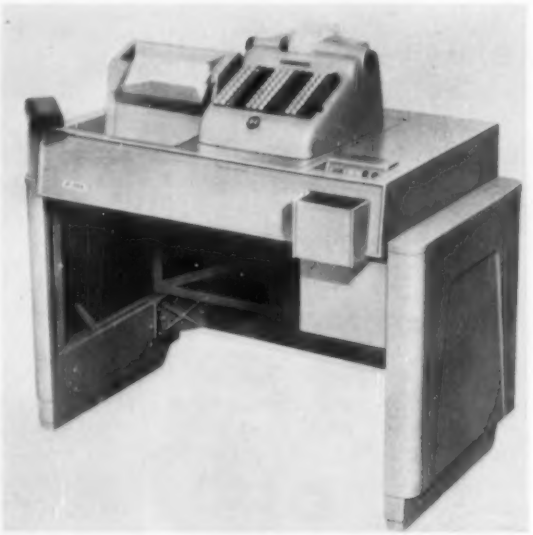
The Burroughs Corp. has announced the "world's fastest electronic sorter", a magnetic character sorter that will handle checks at speeds in excess of 1,500 items per minute. The sorter moves paper documents 400 inches a second. Its operation is 10 times faster than manual sorting by one person.

Maximum sorter efficiency is obtained through grouping of the machine's controls and conveniently placing all necessary operations within an area nine feet long. The sorter contains 13 pockets—10 digital-sort pockets, two special item pockets, and a reject pocket. The special item pockets permit a wide distribution of special categories and reduce the number of sorting passes necessary.

Paper or card checks of varying sizes and thicknesses, as well as those with a degree of mutilation, may be processed through the sorter. Items can be intermixed and do not require jogging prior to being placed in the machine.

The sorter operates by magnetic ink character recognition, a common language principle adopted by the American Bankers Association for coding checks and other bank documents (see MANAGEMENT and BUSINESS AUTOMATION, March issue). Burroughs has developed a complete line of electronic equipment operating on the MICR principle, so that banks may enter automation all at once or by a gradual step-by-step process. All of the equipment can be blended into an integrated system.

Among this equipment, all of which has been field tested and is now in production, is the Amount and Account Number Printer. This device prints the dollar amount and the transaction code in magnetic ink on the face of the check, combining the proof function and amount coding into a single initial handling of each item. Another machine, the Magnetic Imprinter, performs on-premise magnetic ink encoding on checks and deposit slips. It provides for the precise positioning of account number and imprints customer's name and address. Circle No. 5-13



The Amount and Account Number Printer uses MICR principle.

Machine Time Meter

An instrument, specifically designed to register actual machine time of all tyes of electric or electronic punched card and data processing machines including the key-driven types, has been developed by the Engler Instrument Co. The Engler Business Machine Elapsed Time Meter is said to accurately register hours and hundredths of hours of actual machine processing time. Can control machine inactivity. Circle No. 5-14

Visual Control System

The Boardmaster visual system has been designed to control scheduling, inventory, production, traffic, personnel, budgeting, or any of countless operations where data flow is necessary. The actual unit is an aluminum board with a masonite backing, 38½ by 24 inches in size. The system, however, is activated by use of any number and size of stock cards to meet the specific job at hand. The company, Graphic Systems, can handle special system requirements for larger firms. Circle No. 5-15

Procedure Forms

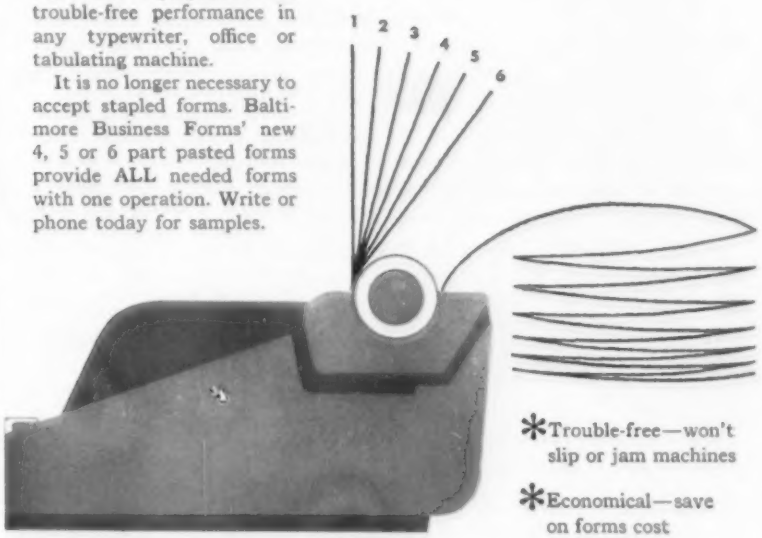
Pro-Forms, a product of the Pro-Forms Co., have been designed to present processing instructions for machine accounting procedures on a step-by-step form. The forms are 6 3/16 by 8½ inches in size, and have standardized descriptions of operations of punched card equipment. A procedures writer can select the applicable Pro-Form and complete the step-by-step sequence of the functional symbols shown on his rough flowchart. All card continuity and step numbering instructions are readily observed. Pro-Forms are available in two regular kits and a tailored kit. The "conventional" kit includes sufficient Pro-Forms to prepare 25 machine accounting procedures on IBM equipment. The "Series 50" kit is designed for punched card installations using IBM Series 50 equipment. Tailored kits are especially designed for punched card installations using IBM equipment other than "conventional" or Series 50. Circle No. 5-16

AN IMPORTANT ADVANCEMENT. AVAILABLE NOW FROM BALTIMORE BUSINESS FORMS

NEW 2 to 6 Part PASTED Continuous Forms

For the first time you can get PASTED continuous carbon interleaved forms with up to 6 parts or copies. Non-slip, non-jam operation. PASTED with Baltimore's new methods and equipment for trouble-free performance in any typewriter, office or tabulating machine.

It is no longer necessary to accept stapled forms. Baltimore Business Forms' new 4, 5 or 6 part pasted forms provide ALL needed forms with one operation. Write or phone today for samples.



*Trouble-free—won't slip or jam machines

*Economical—save on forms cost

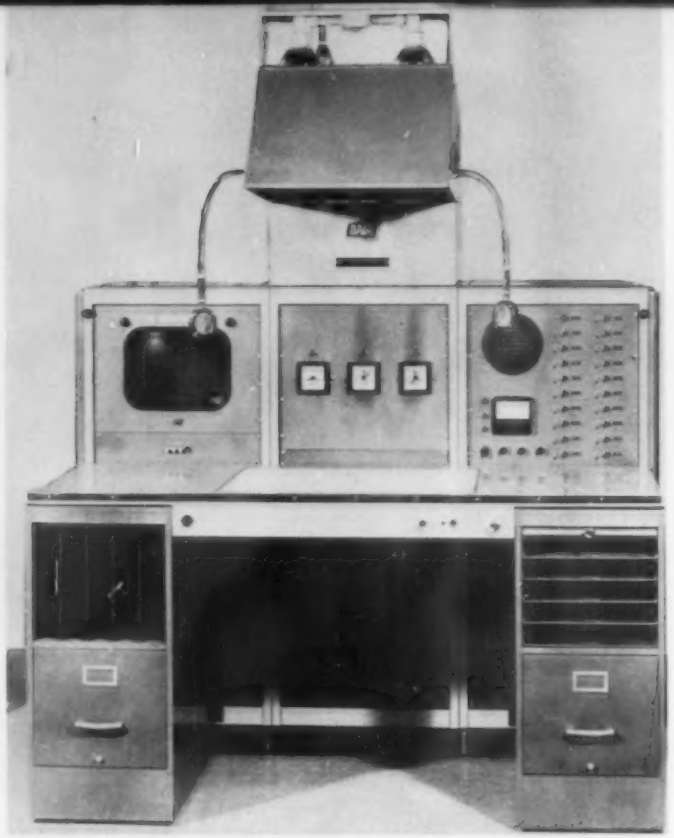
Baltimore Business Forms

(DIVISION OF BALTIMORE SALESBOOK CO.)

3126 Frederick Ave., Baltimore 29, Md.

For More Information Circle Reader Service Card No. 5-63

User can dial for records, files, schedules or other data which will appear instantly on the remote TV monitor.



This "data console" is the heart of the closed circuit TV system which provides instantaneous access to visual data to remote areas of a plant, office. Console is completely automatic, responding to controls at each remote monitor.

TV Console Provides Data To Remote Areas

An MBA Product Preview

INSTANTANEOUS access to visual data by any number of offices, or throughout a factory or plant, is the object of a new closed circuit television system developed by the Dage Television division of Thompson Ramo Wooldridge, Inc.

The heart of the "Dial-Data" system is a "data console" equipped with a special closed-circuit TV camera. Built into the console is a rack holding 25 slide frames. These frames, in turn, hold the records, files, information sheets, schedules or other data of a constantly changing nature.

When someone in a remote office or department wishes access to this information he simply approaches the remote monitor in his area and dials his "request" direct to the console. His action puts the equipment to work. The correct slide frame mechanically moves down to the white, plastic plate at the center of the console and here the camera picks up the image and sends it to the remote monitor. When the information is accepted, the slide is returned to its place. The console base has additional storage capacity for material which can be placed on the unit by hand.

The console itself has a monitor at one side so that anyone in the console room can also view what is on the slide. There is an inter-area communication system built into the unit which permits the remote office to "buzz" someone in the console room to ask for special information or assistance of any kind.

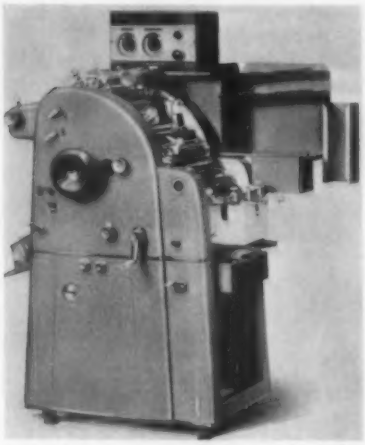
The camera, located in the hood at the top of the console, automatically focuses itself on the slide below to bring the picture in clearly. If, for instance, data is on a typewritten sheet, overhead lights will eliminate any show-through. If the data is transparent, such as a drawing, lights below the plastic frame will shine through to give the necessary contrast.

The "Dial-Data" system is an adaptation of Dage's Weather-vision TV system now in use at 18 Air Force and Navy bases. It provides instantaneous weather information in the form of area maps to "ready" rooms anywhere on the base.

While the conventional system holds 25 standard slides, engineers at Dage have already worked out a system which could utilize a rotary drum container for the data. This would provide over 200 individual choices to the remote areas. A special device cuts off other remote controls when one area is operating the console.

Dage introduced the new system at the recent Institute of Radio Engineers Show at the New York Coliseum. It was announced at that time that the cost for the basic installation would be approximately $20,000. ■

Large Image Duplicator



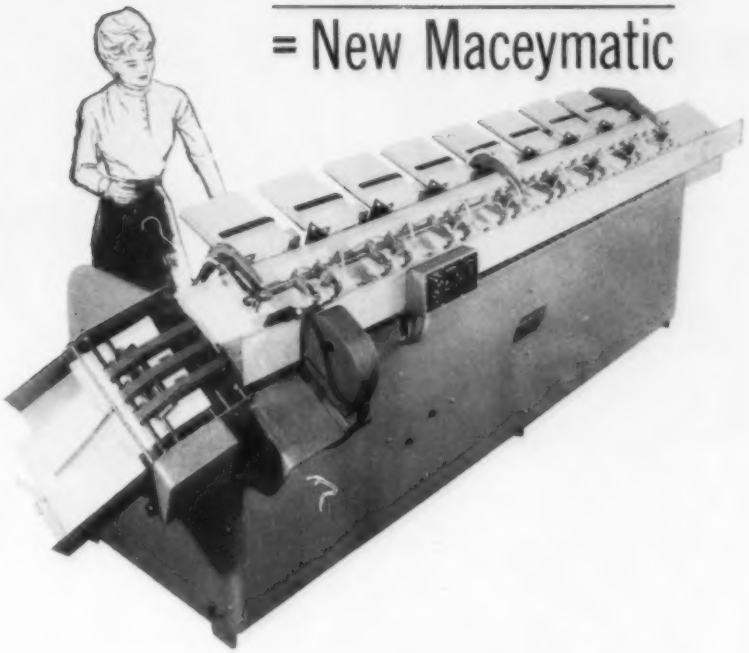
A high-speed, automated offset duplicator with an image area of 10½ by 16½ inches is now available from the A. B. Dick Co. Model 365 makes it possible to duplicate large-sized forms at the rate of four complete systems jobs per minute. The machine is also designed for repetitive duplicating required for paperwork systems such an inventory and cost control. Circle No. 5-17

Portable Tape Recorder

The TransMagnemite is the latest and most advanced model in the Amplifier Corp. of America line of portable, transistorized, field recorders. It is said to be the only battery-operated, spring-motor recorder made that exceeds the professional standards of the NARTB for frequency response, flutter, wow, and dynamic range. The unit is designed for field work under adverse operating conditions. Circle No. 5-18

In automatic collating

Lowest cost
+ Highest speed
= New Maceymatic



If your office prepares multi-page reports, catalogs and similar collated materials at frequent intervals, you'll save time and money with MACEYMATIC. This fully automatic, vacuum-feed collator costs less than any other . . . offers many features found only on higher priced machines.

Maceymatic frees your clerical help for other duties. It relieves them of a tedious, exhausting job. (Often done at overtime rates.)

Automatic, fast, errorless, MACEYMATIC is inexpensive to operate. It offers such features as missing sheet detector; speed of 2,600 cycles per hour; one-minute set-up time; handles sheet sizes ranging from 5″ x 8″ to 9″ x 12″.

Booklet will help you. In case you aren't certain that a MACEYMATIC has a place in your business, send for a copy of "The Gathering Storm". It will open your eyes to facts you might not be aware of.

Free survey. Get in touch with us and we'll run a fast check of your business to help determine where and how you'd save with a MACEYMATIC . . . how quickly it would pay for itself out of savings.

HARRIS INTERTYPE CORPORATION

MACEY COMPANY

A Subsidiary of Harris-Intertype Corporation

13821 Enterprise Avenue, Cleveland 35, Ohio

For More Information Circle Reader Service Card No. 5-44

More News

Continued from page 12

Named Controller of Elgin Metalformers

George R. Planert, Jr.

George R. Planert, Jr., was recently announced to be the new controller for Elgin Metalformers Corp. He joins the company after serving as assistant secretary and assistant treasurer of the Pyle-National Co.

Tab Card Cabinet Wins Award

A corrugated filing cabinet for tabulating cards was the recipient of a bronze award in the recent fibre box competition sponsored by

the Fibre Box Association in Washington, D.C.

The cabinet, manufactured by Binghamton Container Co., Inc., is made of heavy, double-wall corregated. Each tray is designed to hold 3,000 cards and the units can be used either singly or stacked together up to five high.

Takes System Analyst Post with Victor

Robert E. Hanf has been named to the newly formed post of electronic systems analyst of the Electronic Sales section of Victor Adding Machine Co. He was with Rem-

Robert E. Hanf

ington Rand's Univac division for nine years after graduating from Northwestern University in 1950. In his new position, he will introduce Victor systems to retail and manufacturing firms and coordinate the systems to the special needs of individual businesses.

Recent Appointments

GENERAL ELECTRIC CO.—Two appointments have been made in the Phoenix, Ariz. Computer department. DuPuy F. Cayce is now sales manager of data processing equipment. He has been with the company since 1958 when he joined as product planner of business data processing equipment. He formerly was with Southwestern Bell Telephone Co.

Dr. David R. Helman has been named consulting computer engineer in operations analysis. He was previously working on the development of logic designs for the computers and computer programming.

In another move, GE named Guy E. Warner to the job of sales manager of process computers in the department. He was previously a sales engineer for process computers for 18 months.

MALT and NESS—This design and engineering consultant firm has appointed R. Allan Hunt as technical director and Francis J. Keryk as chief systems analyst.

REMINGTON RAND UNIVAC—Sales activities for specialized applications of Univac computers in the industrial fields are now under the direction of Gordon Smith, recently named director of industry marketing. Mr. Smith was formerly with IBM in various management capacities.

The company announced that Myron A. Angier has taken the post of commercial sales manager in the Univac division. He has been assistant branch manager for Univac sales in the New York area since 1954.

DIEBOLD, INC.—Rodney T. Sampson has been given the post of product manager of the company's systems printing operations. He was formerly systems manager for Loan-a-matic Systems of Hartford, Conn., and he is a specialist in the design of record and coding methods for banks, particularly in the installment loan and mortgage divisions.

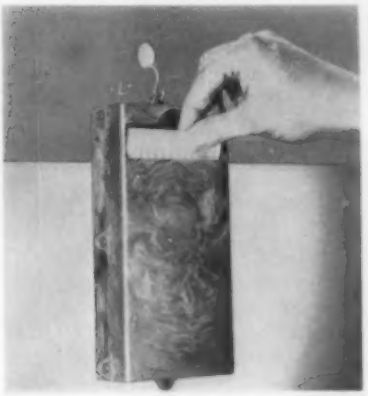
BATTELLE MEMORIAL INSTITUTE—John K. Wetherbee has been named chief of the systems engineering division of this organization. He will direct a varied program of research on automatic processing and control systems. He has been with the Institute since 1953.

DENNISON MFG. CO.—The appointment of Frank T. Gerould as merchandise manager of the Machine Systems division of this firm was announced recently. The division is responsible for the design and merchandising of Print-Punch, Dial-Set, and Pinning machines and their respective tags, labels or tickets. Mr. Gerould has been with the company since 1956.

DAGE TELEVISION DIVISION—Dale A. Schonmeyer has taken the position as manager of advertising and sales promotion for this division of Thompson Ramo Wooldridge, Inc. He joined Dage in the fall of 1958 as senior representative in industrial sales. Prior to that he was in the parent firm's Electronics division.

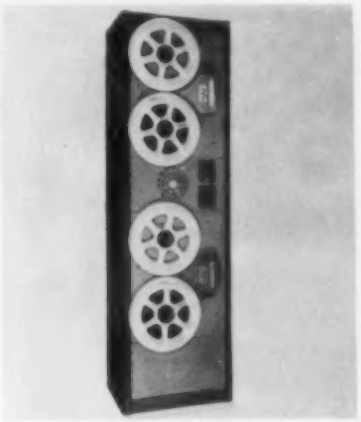
GEISS-AMERICA—Wally Moen, for 18 years administrator of Bell & Howell's national distribution, has been named sales director of Geiss-America.

Traveling Card Holder



Latest addition to the Cowan Boyden line of card holders is the Travel Card Holder designed to keep tab cards in place during assembly or production operations. Cards will stay in the holder as work travels from station to station. Eight eyelets provide a means of hanging or attaching the holder to jigs, fixtures or units traveling on conveyor belts. Holds 75 or 150 cards. Circle No. 5-19

Background Music Unit



This AltoFonic Corp. equipment intermixes taped music from two reels, each of which has different programmed music, and it has automatic control of the playing and non-playing intervals in hours or fractional hours. Equipment can be used with any public address system and can have a paging panel to provide for fade-out for announcements. Circle No. 5-21

2-Task Photocopier

The single-copy, transfer-process office copying machine has been combined with the PolyCopy process, recently developed by Cormac Photocopy Corp., into a single unit, the Convertible Corvette. The new machine can now provide one black and white copy or any number of copies (PolyCopy) at a reduced cost over previous methods. The unit still reproduces most printed, typed, drawn or stamped writing, including ball-point pen. It accepts paper up to 11 inches wide in any length. Circle No. 5-20

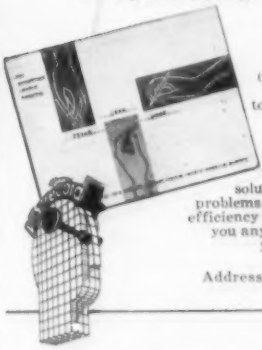
Acoustical Partitions

Substantial noise reduction is claimed when the 1959 line of Soundex portable partitions by GR Products, Inc. are used. The units consist of perforated panels and spun-glass cores. They are said to reduce noise from business machine by absorbing the sounds. The partitions are available in six modern colors and in four styles, ranging in height from 42 inches to 68 inches. Installation and changes are easy to compete. Circle No. 5-22

HOW MUCH WASTE CAN YOU AFFORD?

None, you say? And you're exactly right, for there are enough other factors attacking your profits nowadays without suffering needlessly from controllable waste of TIME, space, money or material! *But take another look – perhaps you aren't really recognizing some important causes of waste.* Do your record-keeping systems provide instant location, foolproof refiling, full visible control and complete flexibility – all in minimum space? Are they adaptable to either hand or machine posting, and to automated methods? Do they give you real "management by exception" or do you just wish for it? Do they give you facts at a glance – instead of too little, too late? Are your employees satisfied with your systems? Unless you can honestly answer "Yes" to these questions you are indeed paying for needless waste – and you need *VISI*record!

- Inventory, Material Control
- Accounts Receivable, Credit
- Purchasing, Order Writing, Followup
- Personnel, Seniority Control
- Maintenance Scheduling, Service Followup
- Production Planning and Control
- I.D.P. Punched Card or Tape Handling
- Or Any Other (Specify)



Write now (or check and clip this ad to your *signed* letterhead) for information about *VISI*record's solutions to your problems – *VISI*record efficiency does not cost you anything unless you DO NOT buy it!

Address Dept. BA-3

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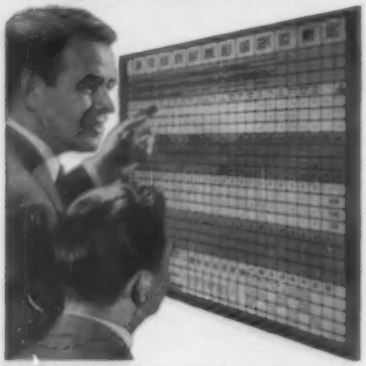
The world's fastest visible record keeping system

Circle Reader Service Card No. 5-65

How To Get Things Done Better And Faster



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- ☆ Gives Graphic Picture—Saves Time, Saves Money, Prevents Errors
- ☆ Simple to operate—Type or Write on Cards, Snap in Grooves
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MANAGEMENT *and* **BUSINESS AUTOMATION**

Fortune P. Ryan On Automation

"WE are in the midst of a technological revolution that presents great opportunities, but nevertheless raises serious questions for any management. Decisions must be made almost daily as to how, and when, and at what cost the business is to be kept apace of our scientific progress."

★

"Business expansion depends on the benefits of automation in the office as well as in the plant. As much as half of the cost of administering a major company can be charged against the processing of 'information.' "

★

"We are coming into a greater use of scientific techniques in the realm of decision-making. Many have felt that decision-making is a personal activity that cannot be improved with technology. But the skepticism that once existed on this score is evaporating rapidly."

★

"The time is coming, I believe, when we shall have electronic computers as portable as a portable typewriter. They will be carried from office to office and for that matter, from office to home."

★

"Technological advance requires an advancing viewpoint by the people it touches. It is very important that, in the process, people do not get wrong viewpoints."

★

"It is easy for us to shrug off this threat by saying that only a small proportion are unionized and that office workers are rugged individualists who naturally resist unionization; that unions will never succeed in enrolling a majority of office workers. Nothing could be farther from the truth."

★

"Unionized office workers recently paralyzed the mighty Chrysler Corp. All of the accounting employees in the Bell System of A.T. & T., and all of the office workers of Western Electric are unionized.

"Indications are that unionization of the office has progressed further than most of us have believed, or permitted ourselves to believe. Furthermore the unions led by the teamsters have publicly avowed their intention of moving in on this relatively untapped and potentially lucrative field."

★

Mr. Ryan is executive vice president of Royal McBee Corp. and president, Office Equipment Manufacturers Institute.

MBA's Calendar

May 5-7—15th annual conference of the American Society of Training Directors, Inc. at the Sheraton-Cadillac, Detroit, Mich.

May 14—Western Systems Conference, Statler Hilton Hotel, Los Angeles. Sponsored by the L.A. chapters and the Systems & Procedures Association of America.

May 17-20—Insurance Accounting and Statistical Association 37th Conference and Business Show. At the Ambassador, Atlantic City, N.J.

May 25-27—40th International Conference of the National Office Management Association, New Orleans, La. Contact W. H. Latham, NOMA, Willow Grove, Pa.

June 4-6—First national meeting of The Institute of Management Sciences (TIMS) at the Congress Hotel in Chicago. Information from Harold H. Cauvet, 250 North St., White Plains, N.Y.

June 15-20—First International Conference on Information Processing, Paris, France. Contact for U.S. committee, I. L. Auerbach, Auerbach Electronics Corp., 109 N. Essex, Narbeth, Pa.

June 21-24—International Accounting Conference, Waldorf-Astoria, New York City. Contact N.A.A., 505 Park Ave., New York 22, N.Y.

June 24-26—National Machine Accounts Association, national conference and business show, St. Louis, Mo., Chase Park Plaza. Contact N.M.A.A., Paris, Ill.

August 18-21—Western Electronic Show and Convention, San Francisco. Contact Wescon Headquarters, 1435 S. La Cienega Blvd., Los Angeles 35, Calif.

October 4-8—National Business Forms Associates 14th Annual Convention at Chalfonte Haddon Hall Hotel, Atlantic City, N.J. Information from F. J. Ring, secretary, 207 E. Broward Blvd., Ft. Lauderdale, Fla.

October 12-14—International Systems Meeting of the Systems and Procedures Association of America, Royal York Hotel, Toronto, Canada.

October 18-23—National Business Show, New York Coliseum, New York City.

October 28-29—Sixth annual Computer Applications Symposium sponsored by Armour Research Foundation of Illinois Institute of Technology at the Morrison Hotel, Chicago. Contact M. J. Jans, conference secretary, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

November 4-6—Annual Industrial Engineering and Management Clinic, Conrad Hilton Hotel, Chicago.

November 16-20—Fifth International Automation Congress and Exposition, New York Trade Show Building, New York City. Contact Richard Rimbach, managing director, 845 Ridge Ave., Pittsburgh 12, Pa.

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Wanted to Buy

TURN SURPLUS EQUIPMENT INTO CASH! We want to buy bookkeeping machines (Burroughs, NCR, etc.), obsolete unused tab cards, control panels, tab files, and any other tab equipment. Contact UNIVERSAL BUSINESS EQUIPMENT CO., 533 S. Dearborn Street, Harrison 7-4878, Chicago 5, Illinois.

Rates for classified advertising are 75 cents a word with a minimum of $10.00 per insertion. Payment should accompany order. Allow 6 words if blind box number is used. Deadline: 10th month preceding date of issue.

EDITORIAL

Automation and the Unemployment Myth

The daily press is devoting considerable attention to the subject of automation, as are a multitude of radio and TV commentators. Unfortunately, their emphasis is concentrated on the number of jobs eliminated by automatic systems with the result that a large segment of the public has adopted the viewpoint that automation is a serious threat to future employment.

Such thinking is not confined to this country alone. A recent dispatch in the New York Times, datelined United Nations, indicated that the U.N. Economic Commission for Europe will soon convene a meeting of specialists to discuss the economic implications of automation. The article went on to emphasize the labor savings brought about by automation. One example cited a savings bank in Stuttgart, West Germany, in which several computers performed in eighty hours the work previously done by several dozen clerks over a period of three months. The article did not disclose the fate of the clerks.

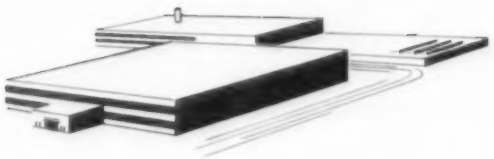
Our guess is that both the computers and clerks are still busily engaged in the business of banking at Stuttgart. We base this conclusion on experiences in this country, where business automation has made its greatest impact.

As Morris G. Fuller, President of the State Farm Life Insurance Co., pointed out in a recent speech before the Automation Forum of the Life Office Management Association, "Over-all manpower is not reduced by these machines, as displaced persons are retrained for other staff positions, often much better positions." Actually, said Fuller, automatic machines have helped meet an acute personnel shortage.

Mr. Fuller's remarks did not make the headlines. The news disseminators prefer to dwell on the theme that "automation is a job devouring monster." For example, a major midwestern daily recently devoted feature space to the quotes of an officer of a large bank that had announced plans to install an electronic check handling system. "Your jobs," said the official to the employes, "are safe—for the rest of the year."

It's our hunch that a year from now this official—if still available—will prefer to forget that glib statement. Efficient systems, automated or not, still require efficient people, and plenty of them. True, business automation may eliminate some job categories just as the automobile diminished the ranks of the blacksmiths, and electricity ended the need for lamplighters. But the blacksmiths became auto builders, and the lamplighters became power linesmen.

The plain facts are that automatic business systems have had no measurable effect on total employment. The general press would do well to report these facts.



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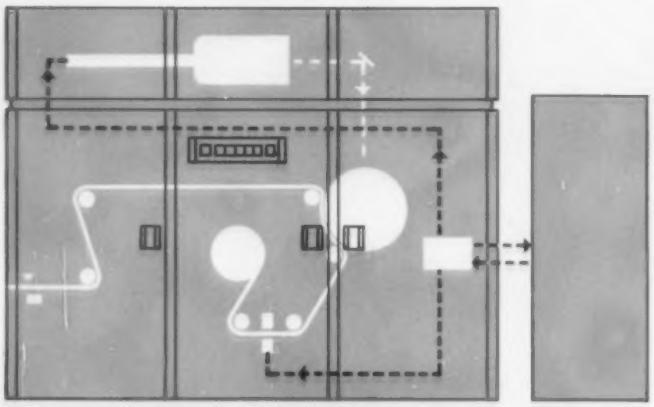

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